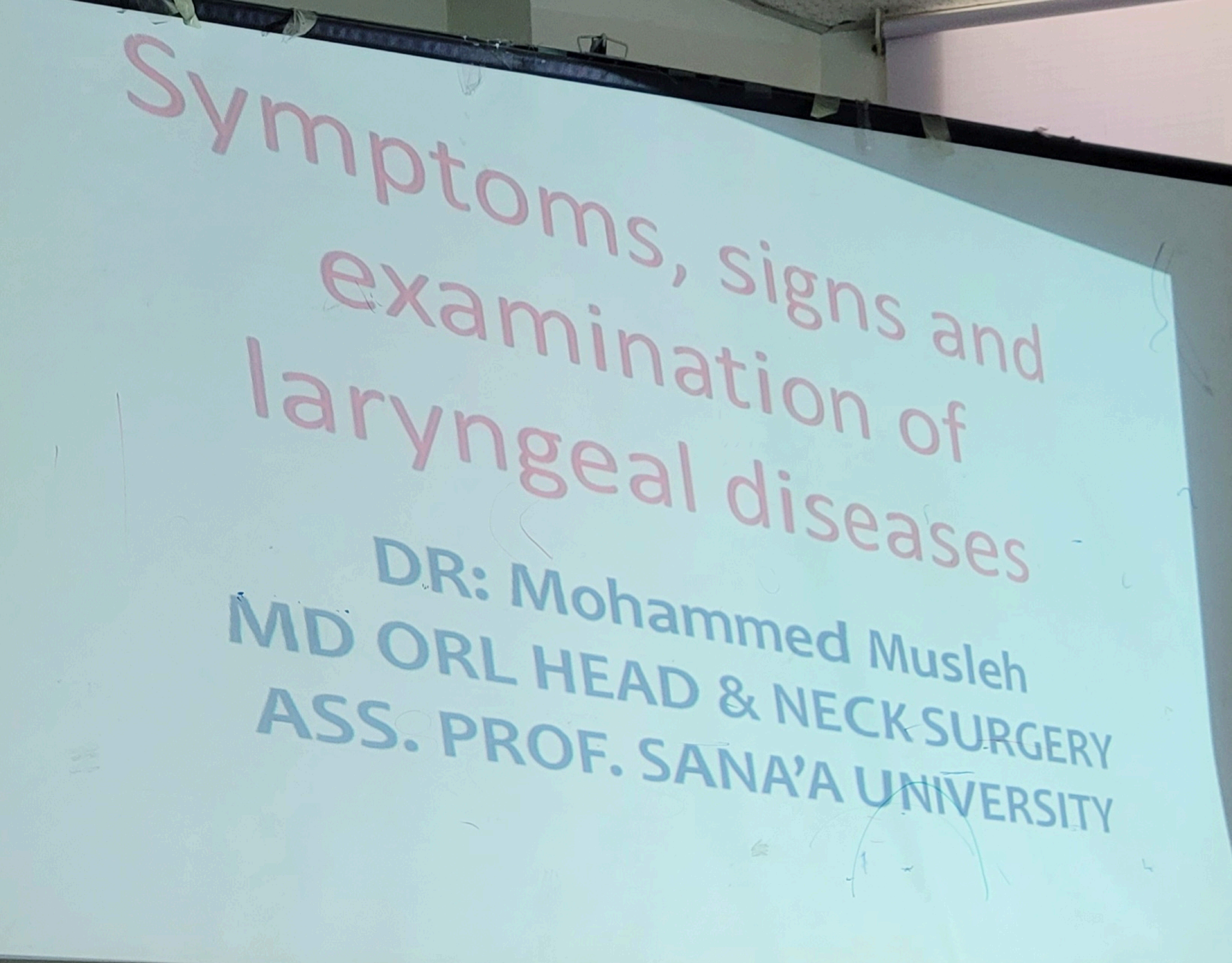
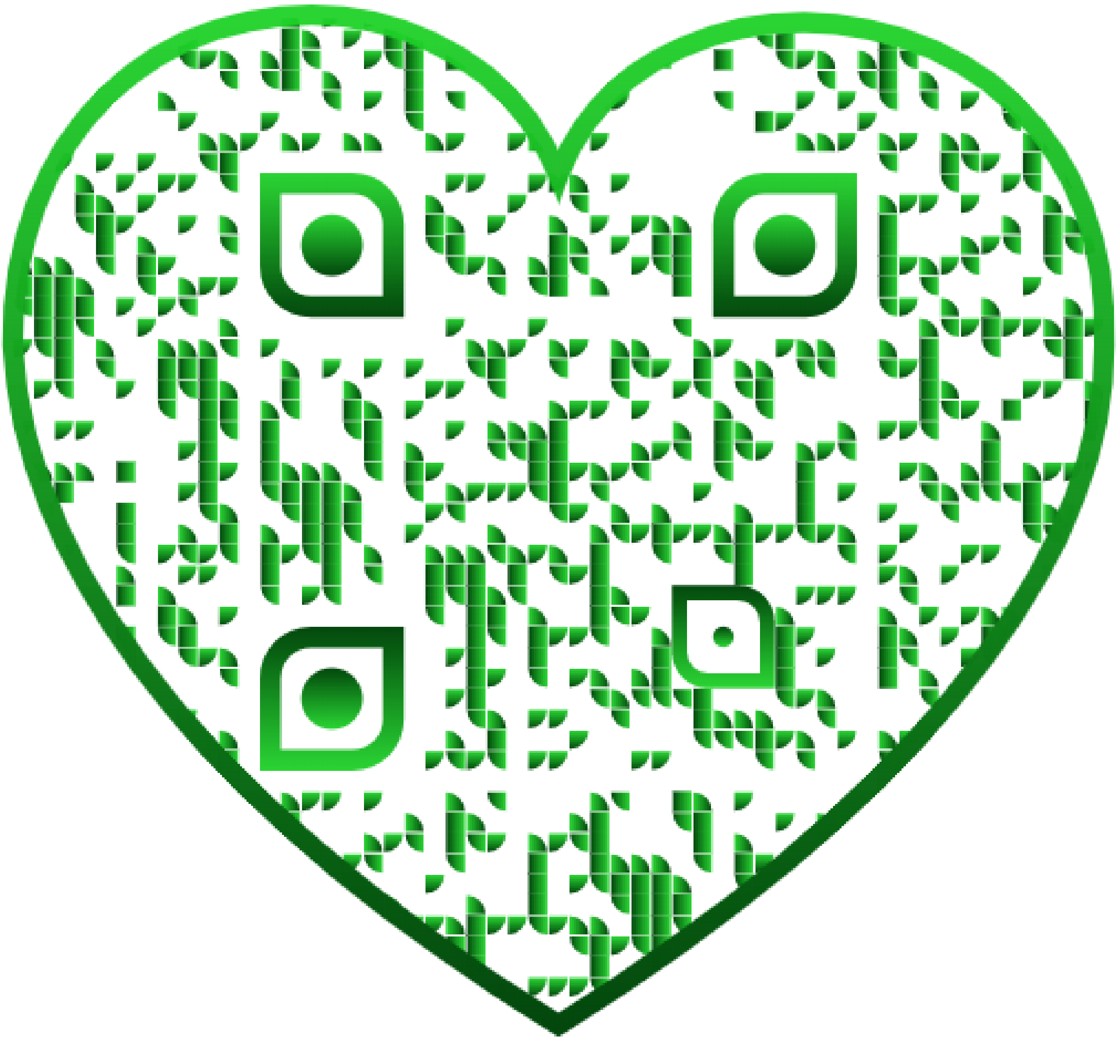
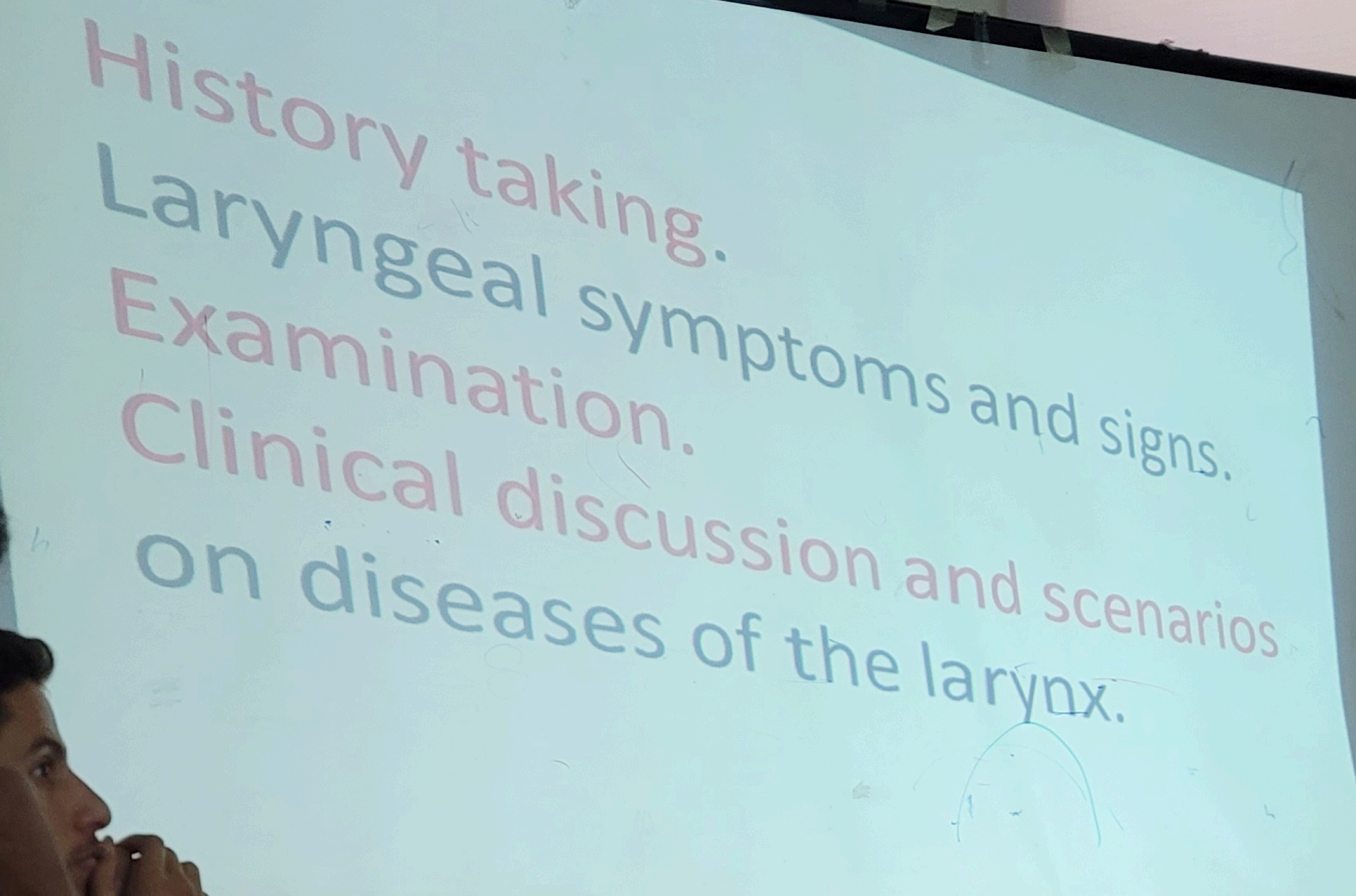


Symptoms, signs and examination of laryngeal diseases

DR: Mohammed Musleh
MD ORL HEAD & NECK SURGERY
ASS. PROF. SANA'A UNIVERSITY





History taking.

Laryngeal symptoms and signs.

Examination.

Clinical discussion and scenarios on diseases of the larynx.

History taking

- Personal history.
- Complaint.
- Present history
- Past history.
- Family history.

Personal history

- Name: to be familiar with the Patient.
- Age.
- Sex.
- Marital states.
- Occupation.
- Residence.
- Special habits.

Complaint

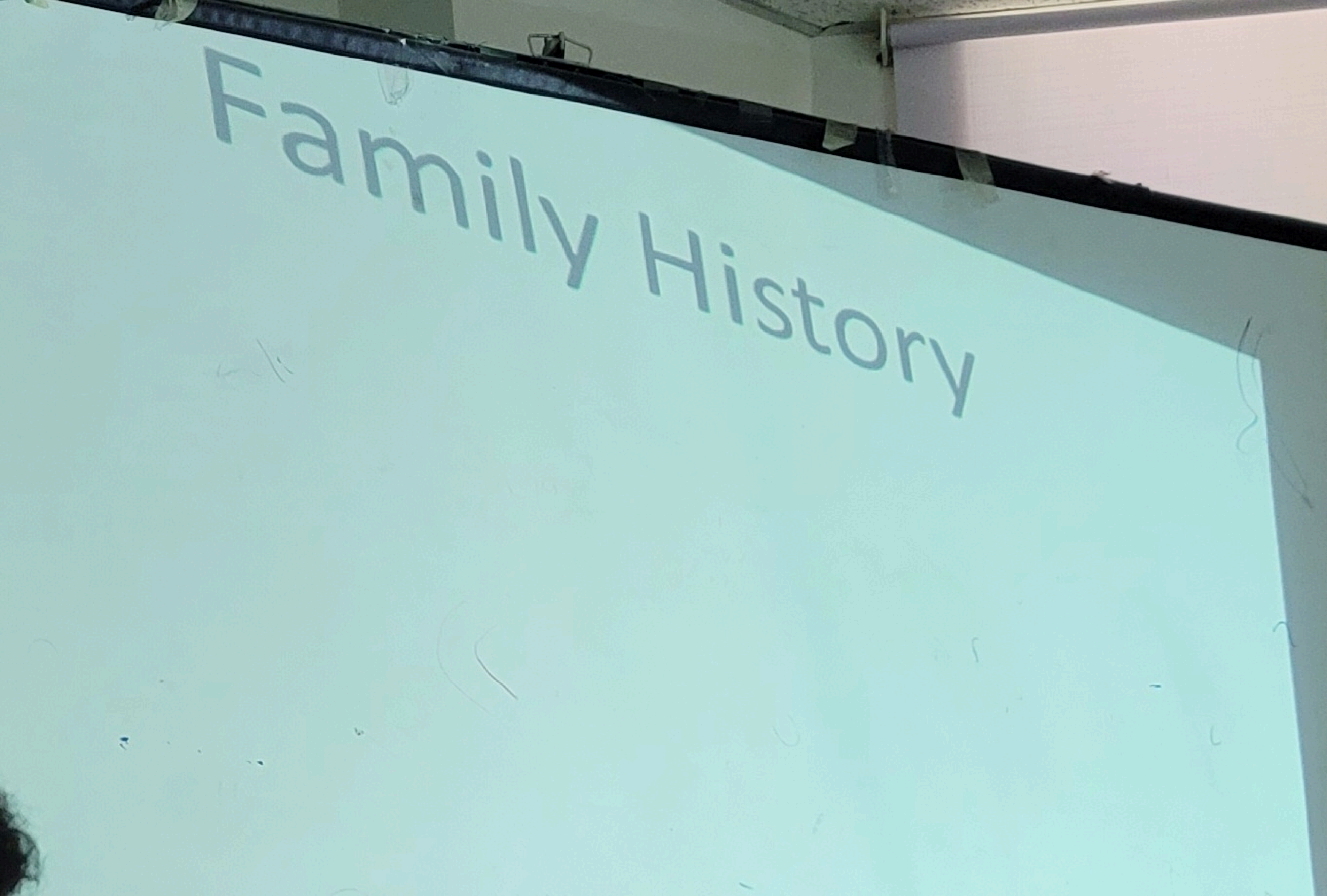
- Patient's own wards.
- Do not use medical terms.

Present history.

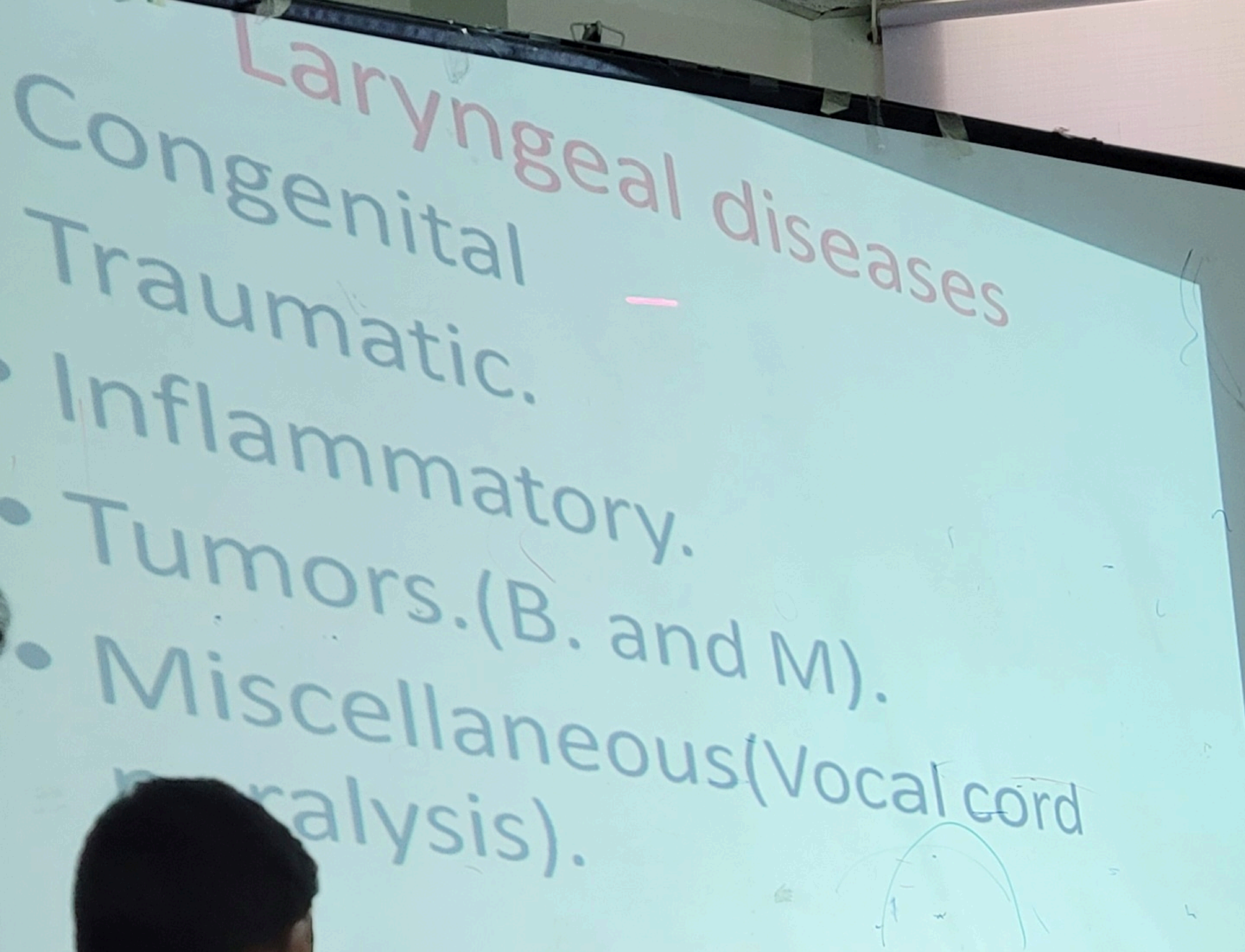
- OCD:
- Onset, course and duration) of main complaint.
- Laryngeal symptoms.
- Other ENT symptoms (briefly).
- General symptoms.

Past history

- Laryngeal diseases.
- Trauma
- Operations.
- Previous ENT diseases.
- General diseases.(DM, HTN...)

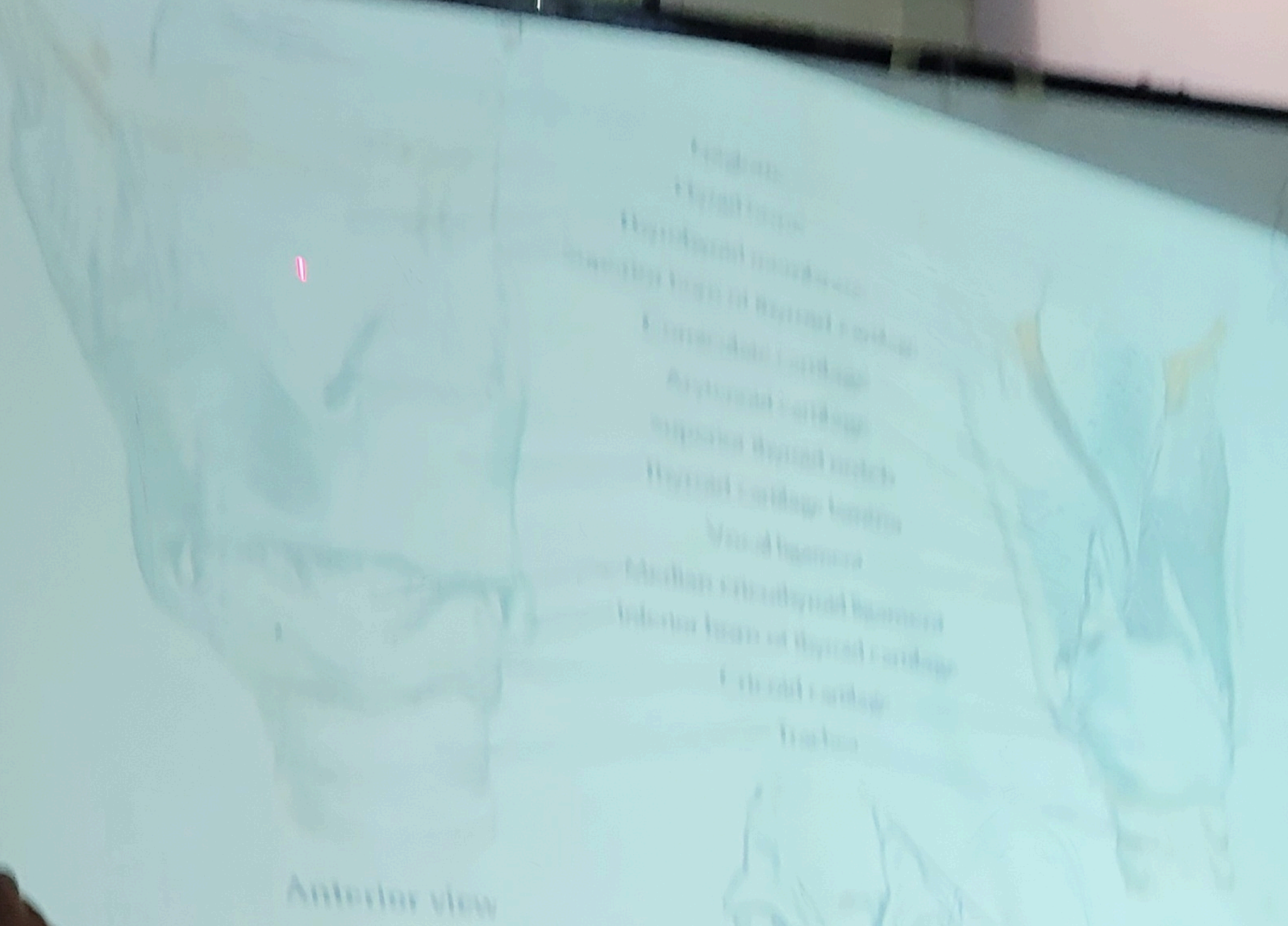


Family History

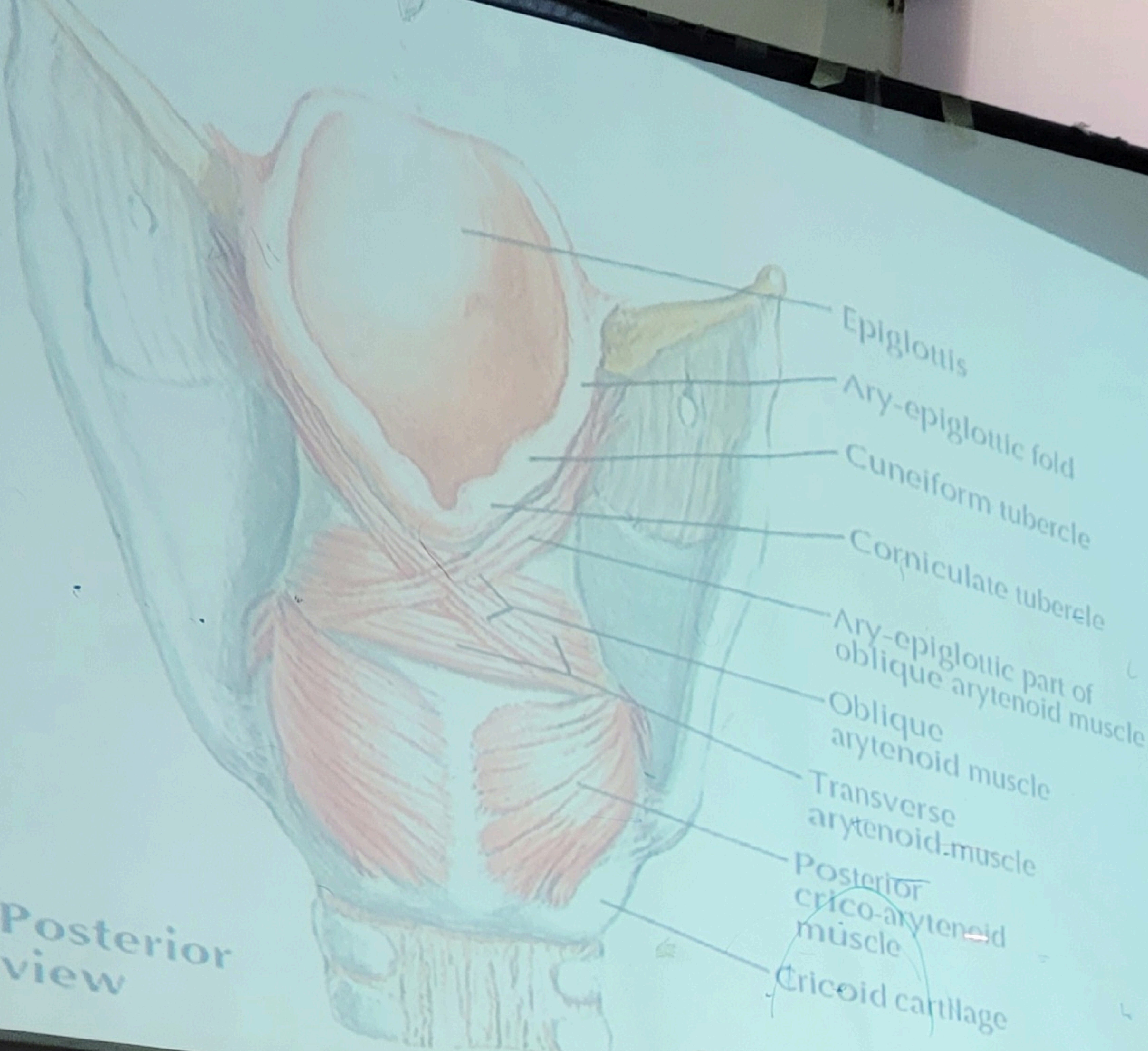


Laryngeal diseases

- Congenital
- Traumatic.
- Inflammatory.
- Tumors.(B. and M).
- Miscellaneous(Vocal cord paralysis).


Epiglottis
Hyoid bone
Thyrohyoid membrane
Superior horn of thyroid cartilage
Corniculate cartilage
Arytenoid cartilage
Superior thyroid notch
Thyroid cartilage lamina
Vocal ligament
Median cricothyroid ligament
Inferior horn of thyroid cartilage
Cricoid cartilage
Trachea

Anterior view

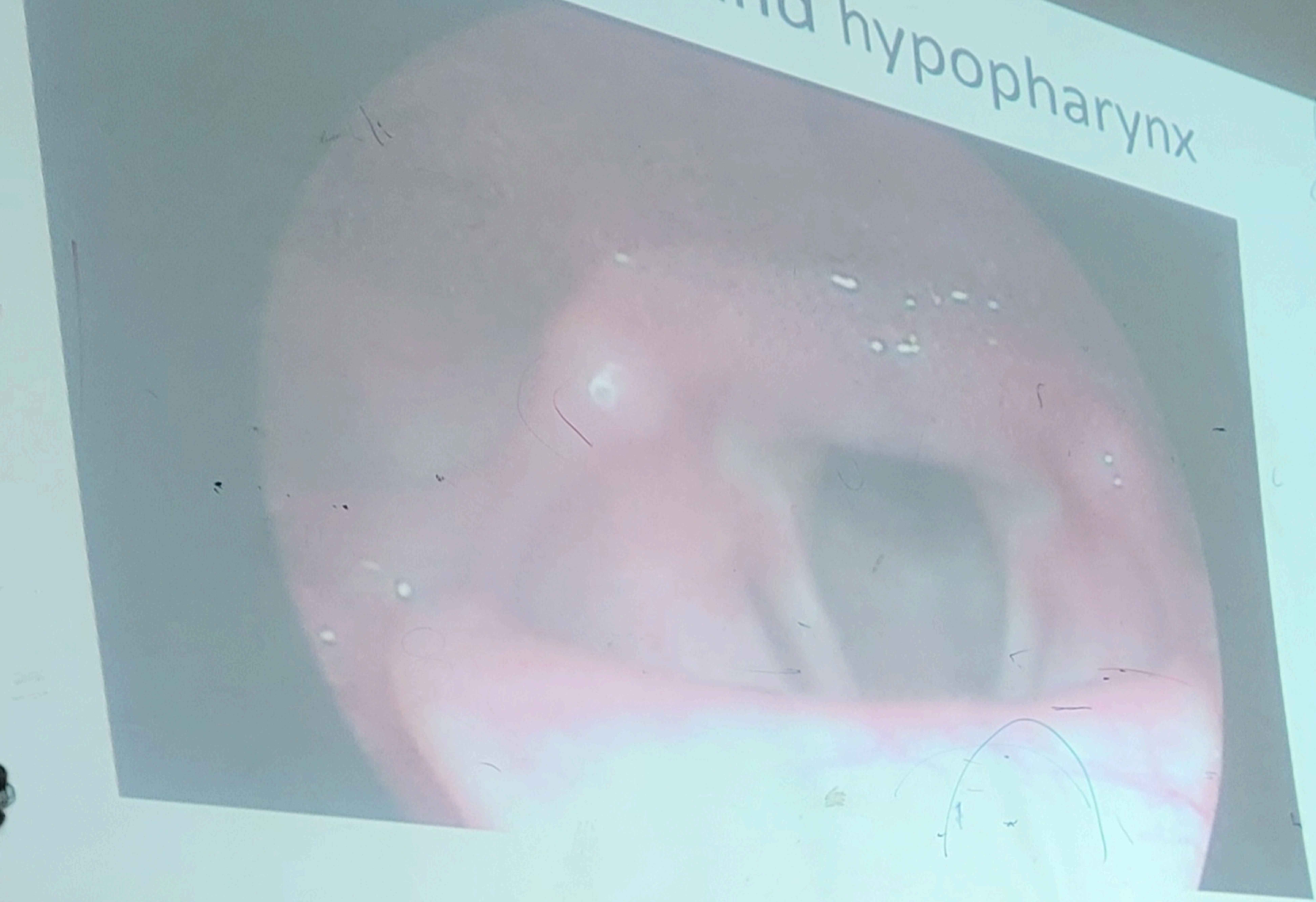

Epiglottis
Ary-epiglottic fold
Cuneiform tubercle
Corniculate tubercle
Ary-epiglottic part of oblique arytenoid muscle
Oblique arytenoid muscle
Transverse arytenoid muscle
Posterior crico-arytenoid muscle
Cricoid cartilage

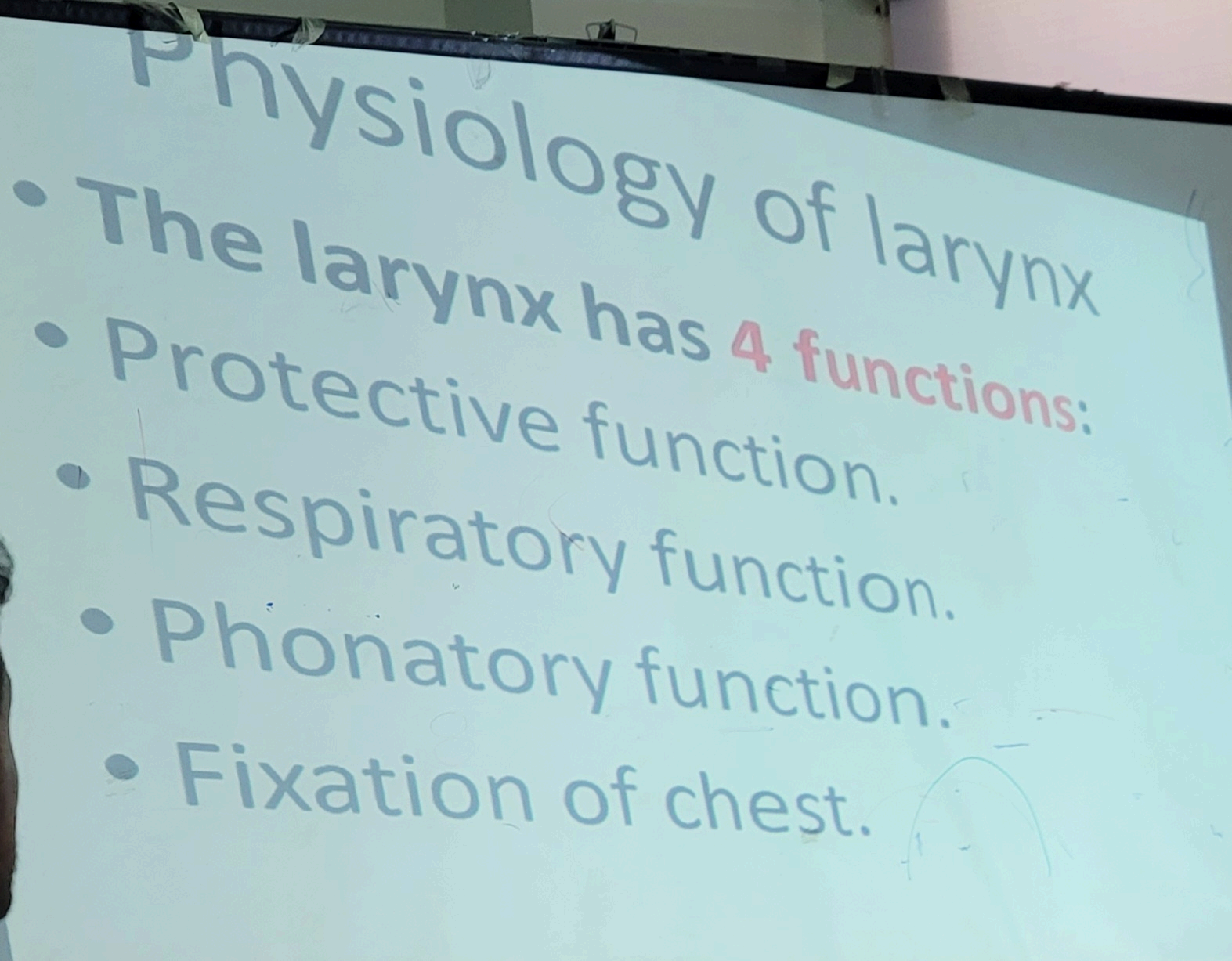
Posterior view

Laryngeal cavity

- It is divided into 3 areas:
- Glottic area: at the level of True VC.
- Supraglottic area: above the level of true VC..
- Subglottic area: bellow the level of true VC.

ormal larynx and hypopharynx





Physiology of larynx

- **The larynx has 4 functions:**
- Protective function.
- Respiratory function.
- Phonatory function.
- Fixation of chest.

Symptoms of laryngeal diseases

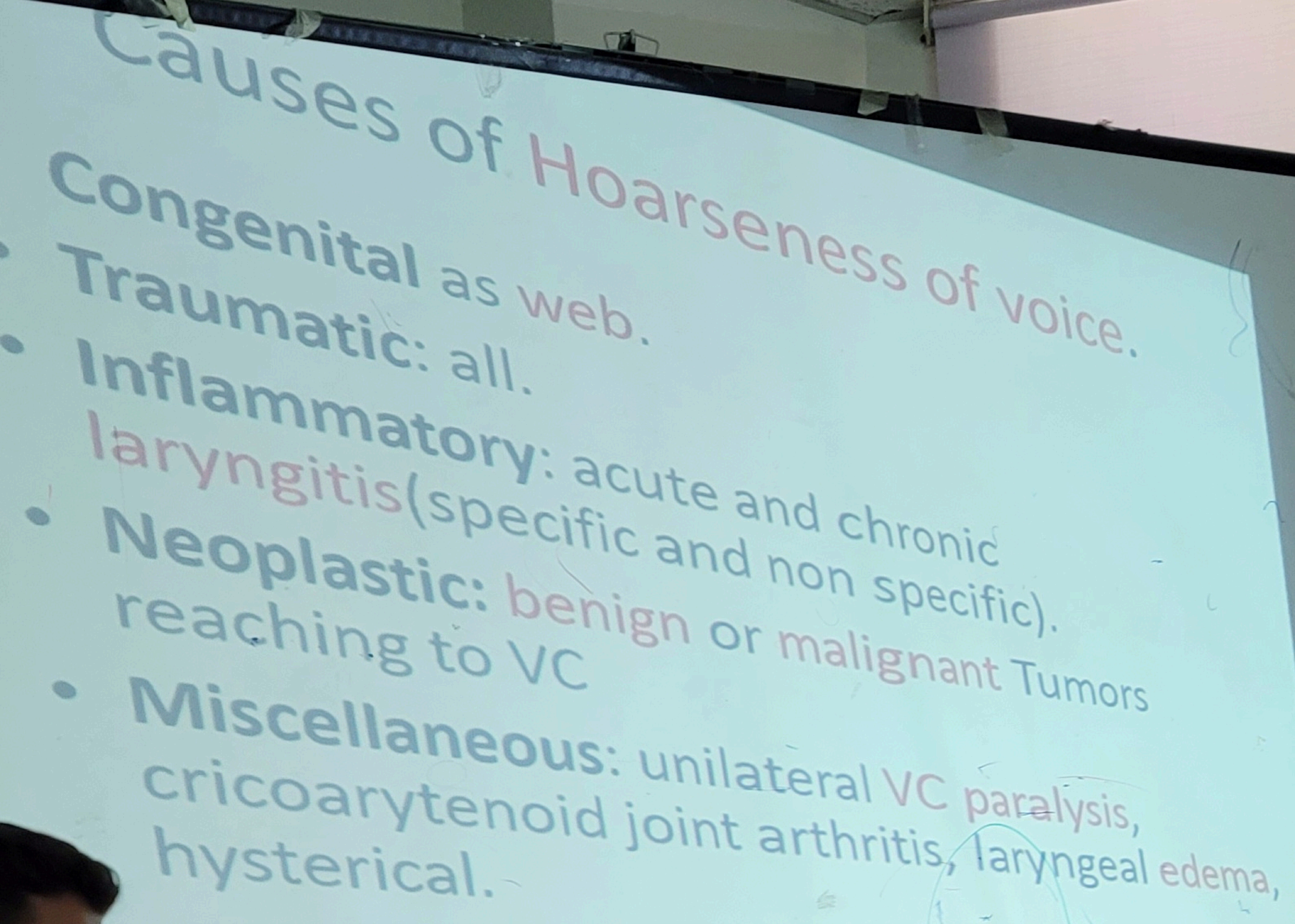
- Hoarseness(Dysphonia).
- Stridor.
- Cough.
- Chocking.
- Pain.
- Neck swelling.
- Distant metastasis.

Hoarseness(Dysphonia)of voice.

Rough quality of low pitched voice due to one or more of 3 factors:

- Impairment of VC tension.
- Impairment of VC vibration(mobility)
- Impairment of VC adduction.

N.B.: due to lesion in true VC



Causes of Hoarseness of voice.

- **Congenital** as web.
- **Traumatic**: all.
- **Inflammatory**: acute and chronic laryngitis(specific and non specific).
- **Neoplastic:** benign or malignant Tumors reaching to VC
- **Miscellaneous**: unilateral VC paralysis, cricoarytenoid joint arthritis, laryngeal edema, hysterical.

Stridor

Difficult and noisy breathing due to partial upper airway obstruction.

Stridor may be:

Inspiratory: during inspiration:

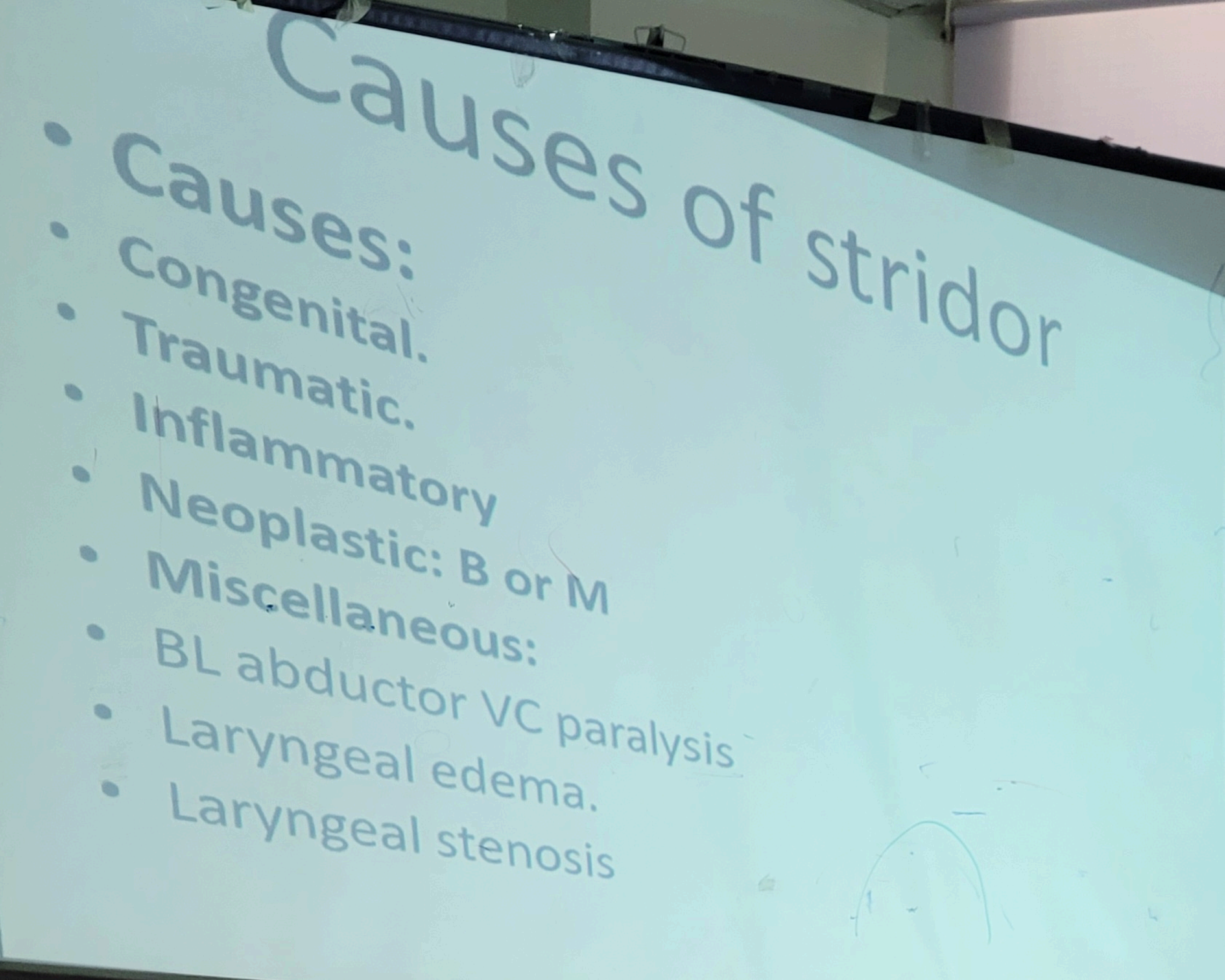
- In glottic and supraglottic obstruction).

Stridor

Expiratory: during expiration(in bronchial obstruction). It is called wheezes.

Stridor

- Biphasic: during inspiration and expiration(in subglottic and tracheal obstruction).

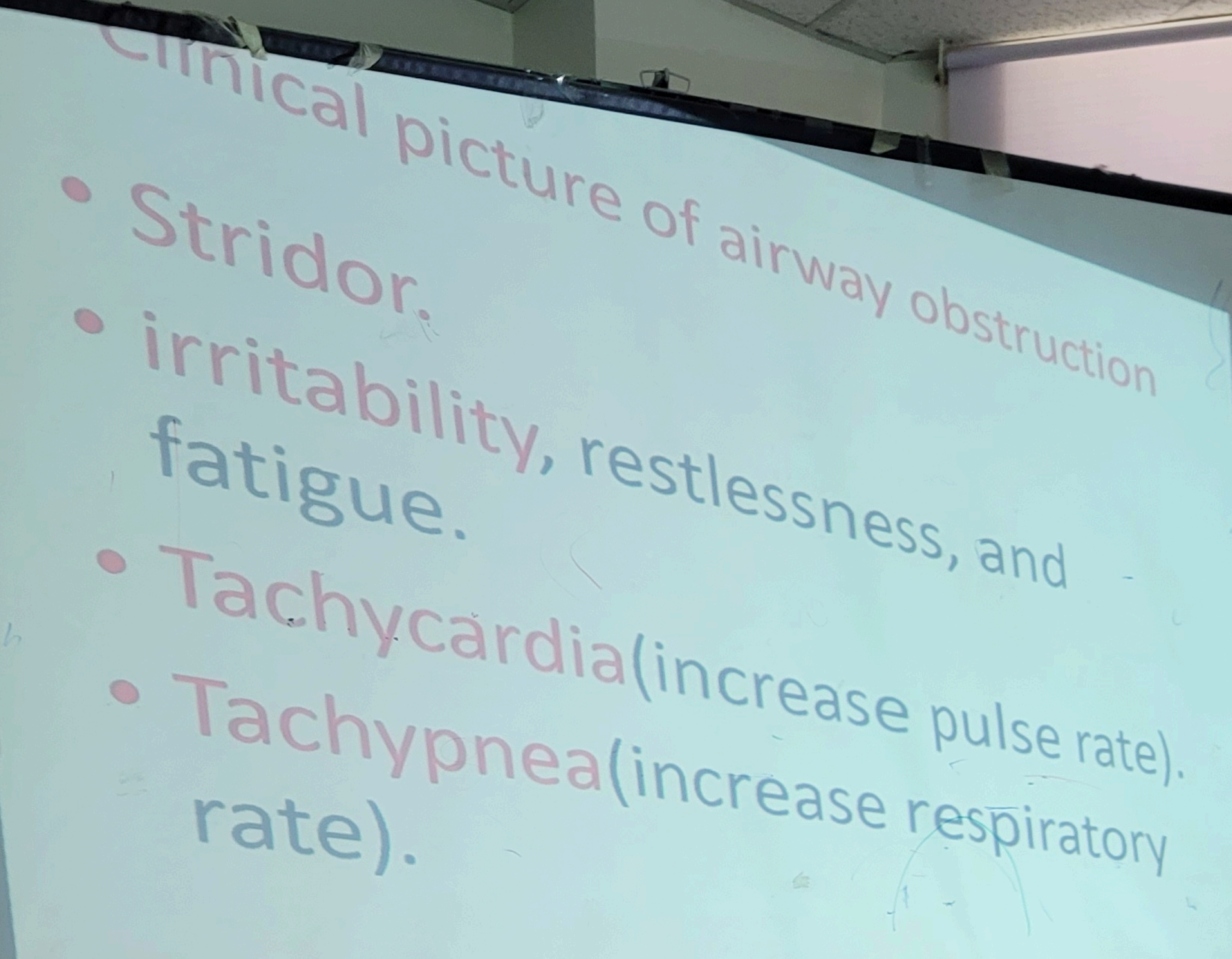


Causes of stridor

- **Causes:**
- **Congenital.**
- **Traumatic.**
- **Inflammatory**
- **Neoplastic: B or M**
- **Miscellaneous:**
- BL abductor VC paralysis
- Laryngeal edema.
- Laryngeal stenosis

Causes of stridor in children

- **Congenital.**
- **Traumatic:** FB, Corrosive laryngitis.
- **Inflammatory:** all acute and chronic.
- **Neoplastic:** juvenile multiple papillomatosis.
- **Miscellaneous:**
- laryngismus stridulus (laryngeal spasm due to calcium deficiency in tetany)
- BL abductor VC paralysis
- Laryngeal edema.



Clinical picture of airway obstruction

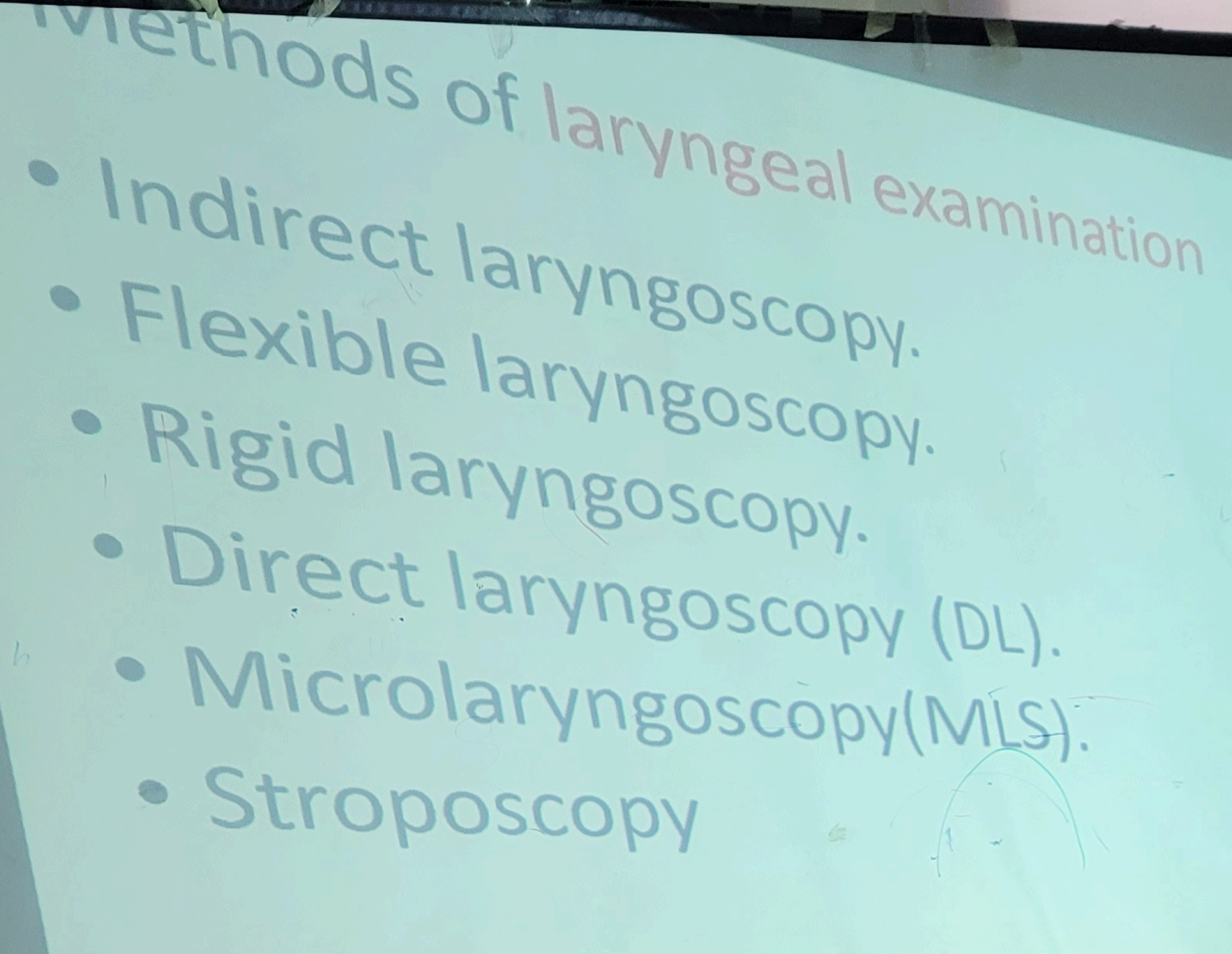
- Stridor.
- irritability, restlessness, and fatigue.
- Tachycardia(increase pulse rate).
- Tachypnea(increase respiratory rate).

Symptoms of laryngeal diseases

- **Cough:** it is dry, except if it was associated with chest infection
- **Chocking:** due to passage of fluids or food through laryngeal inlet

Symptoms of laryngeal diseases

- Pain: referred to the ear through Arnold's branch of vagus.
- Neck swelling: due to LNs metastasis.
- Distant metastasis: in cancer larynx

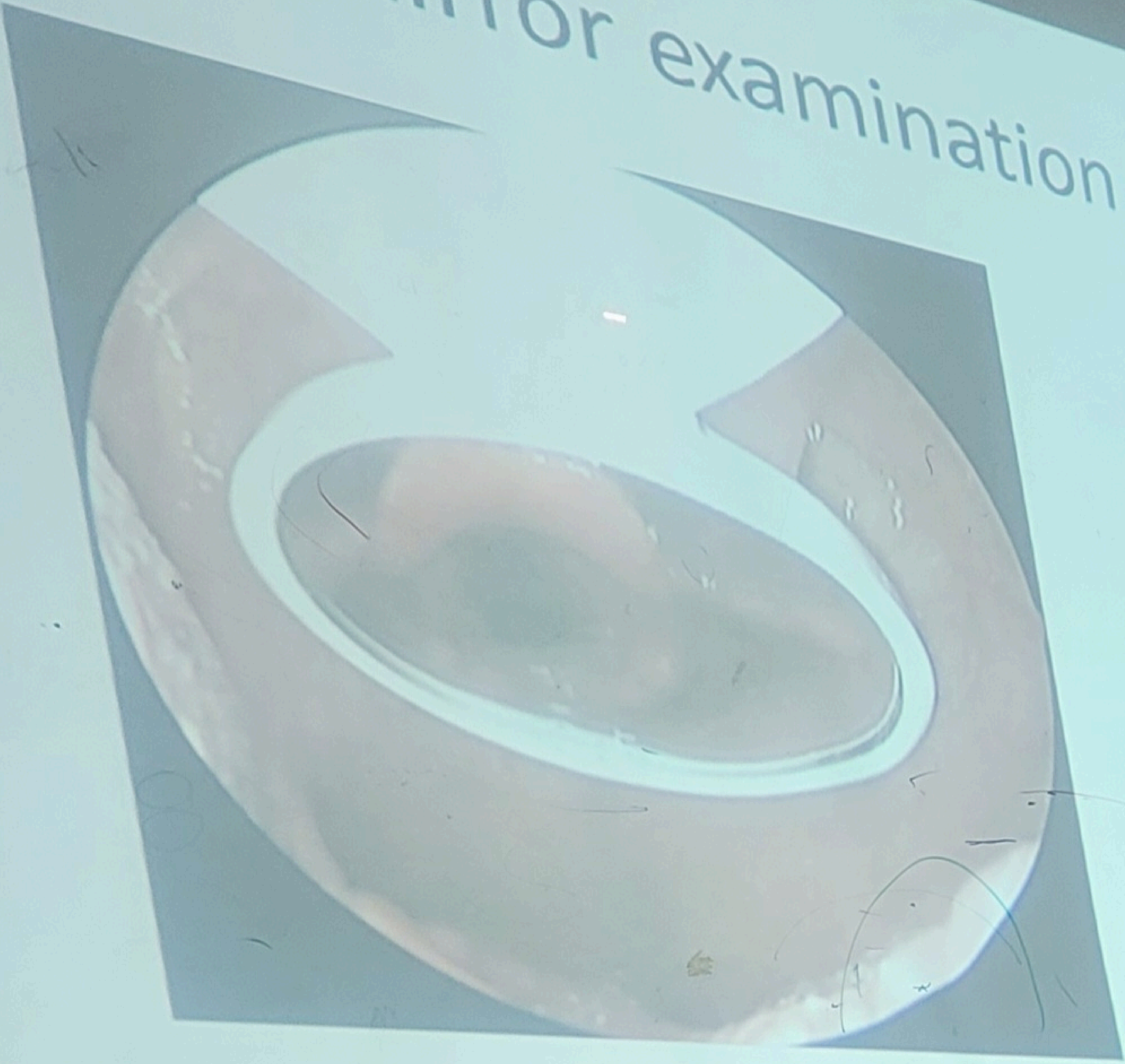


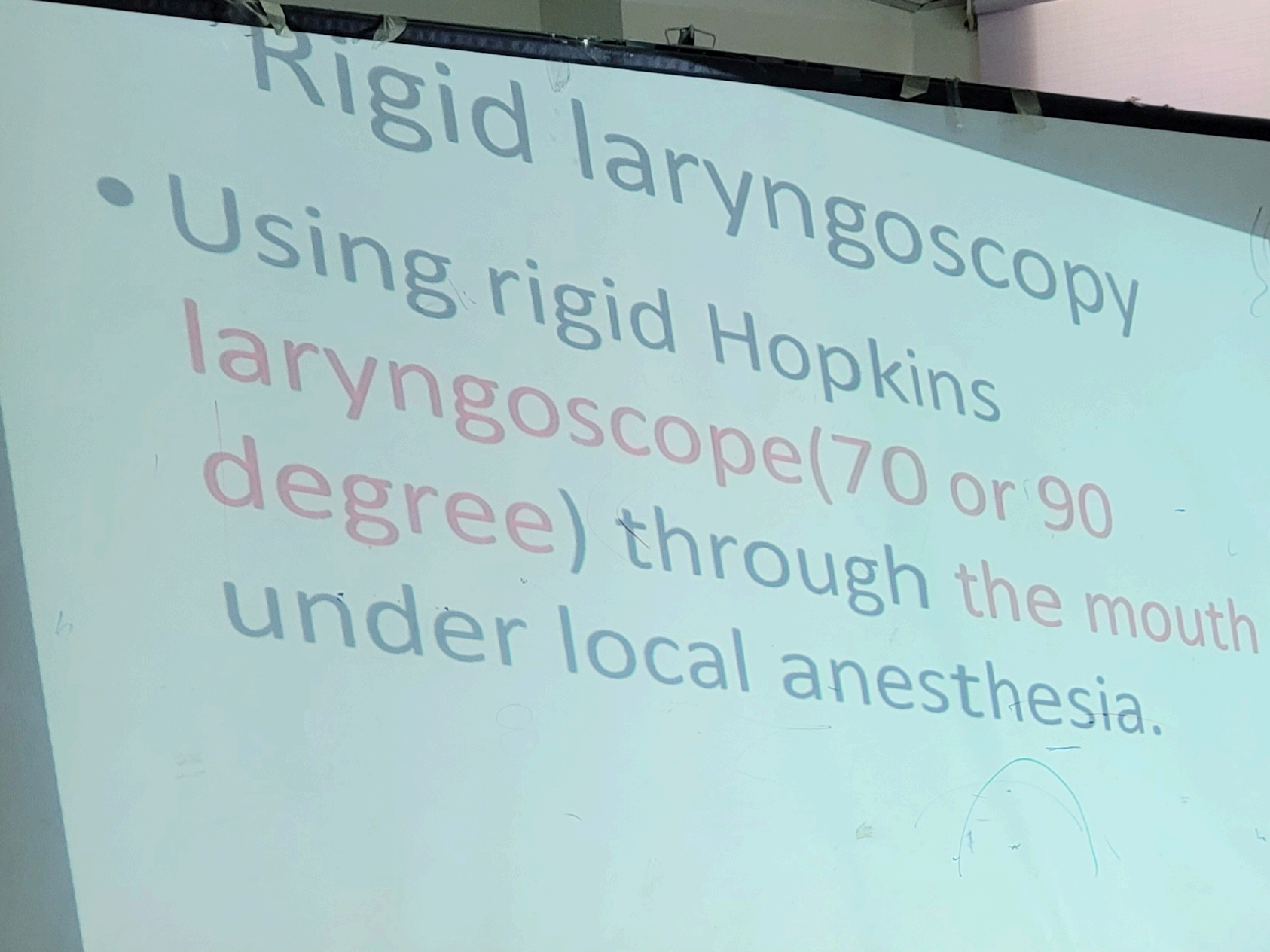
Methods of laryngeal examination

- Indirect laryngoscopy.
- Flexible laryngoscopy.
- Rigid laryngoscopy.
- Direct laryngoscopy (DL).
- Microlaryngoscopy(MLS).
- Stroposcopy

laryngeal mirror

aryngeal mirror examination

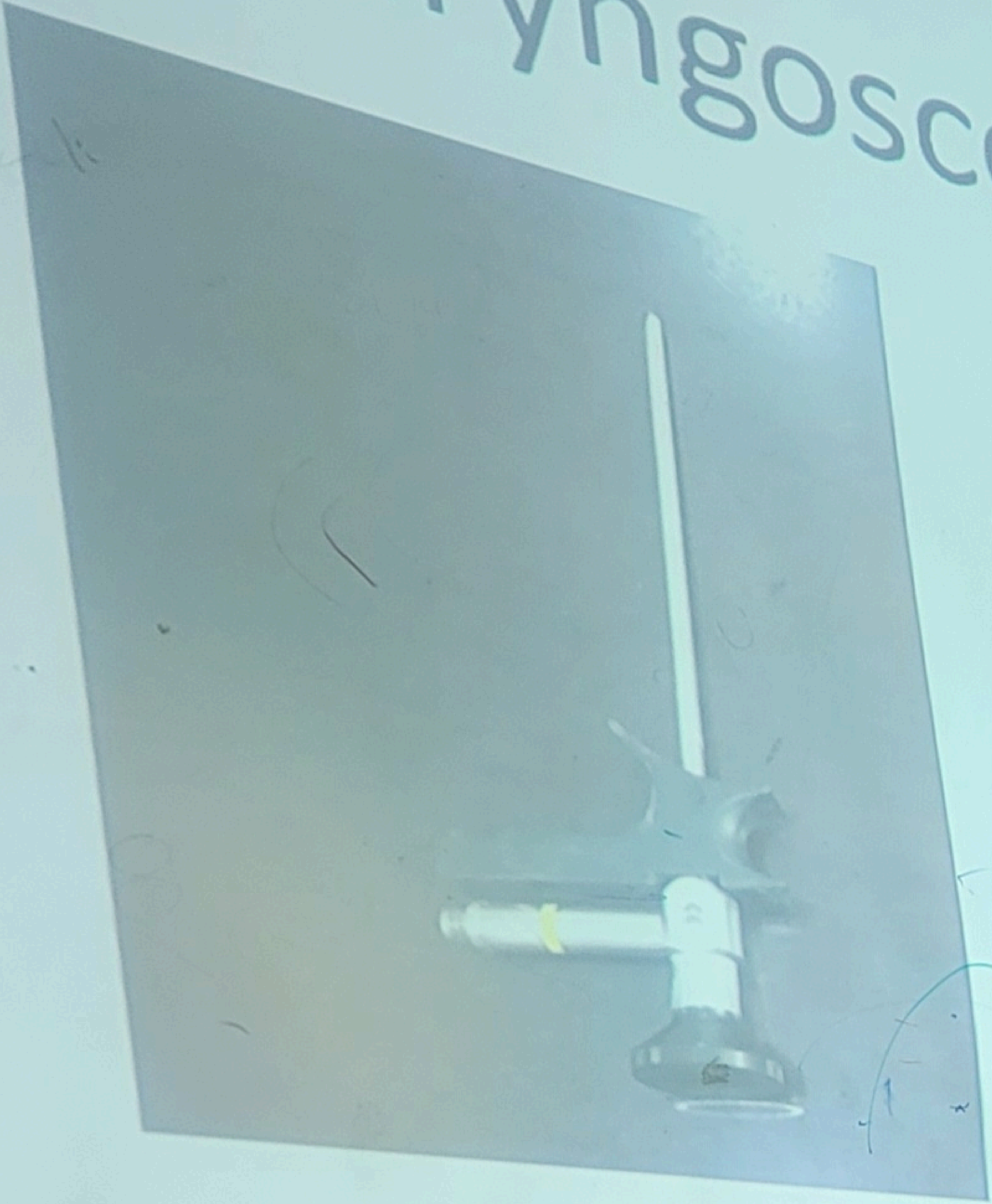


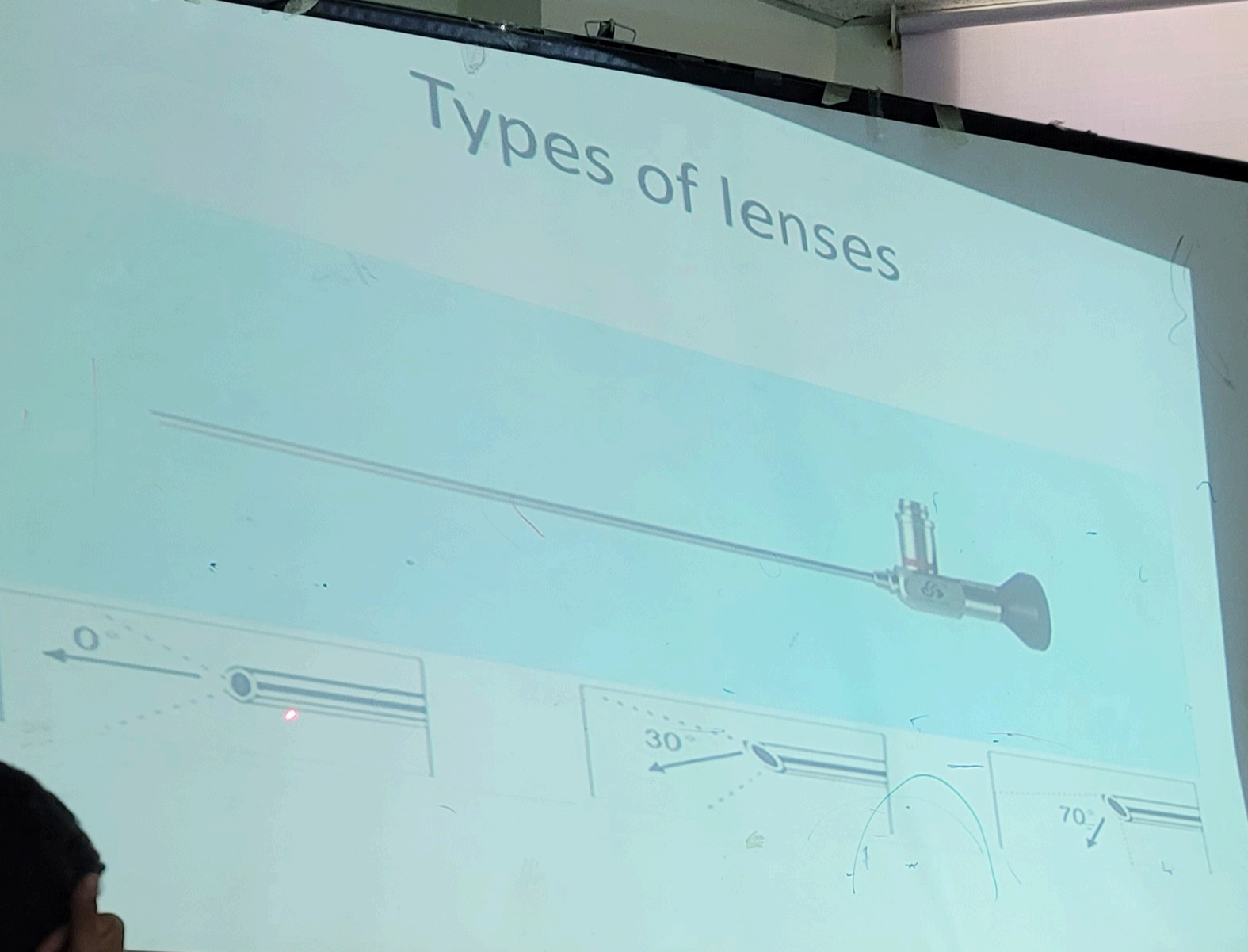


Rigid laryngoscopy

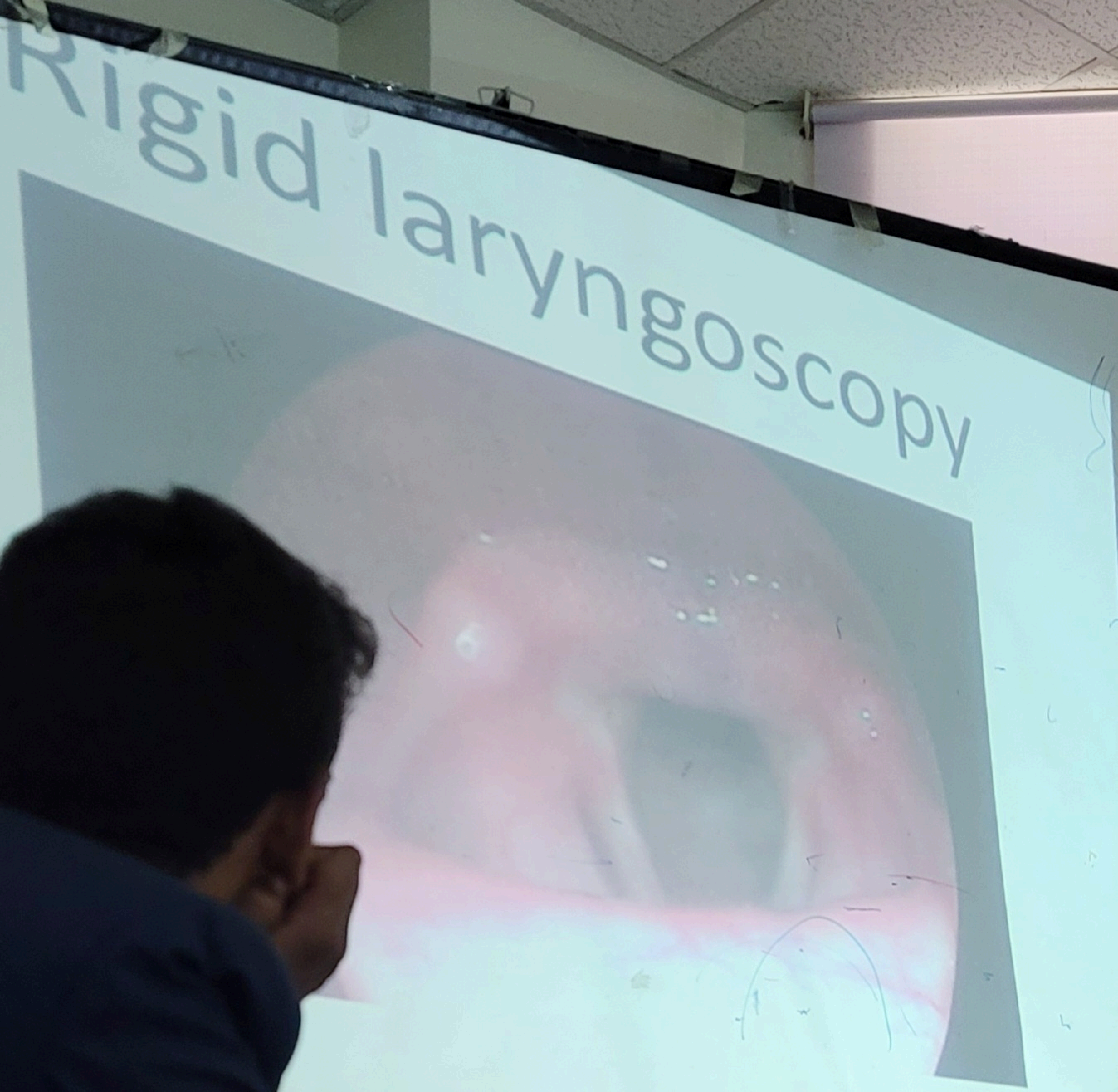
- Using rigid Hopkins laryngoscope(70 or 90 degree) through the mouth under local anesthesia.

Rigid laryngoscope

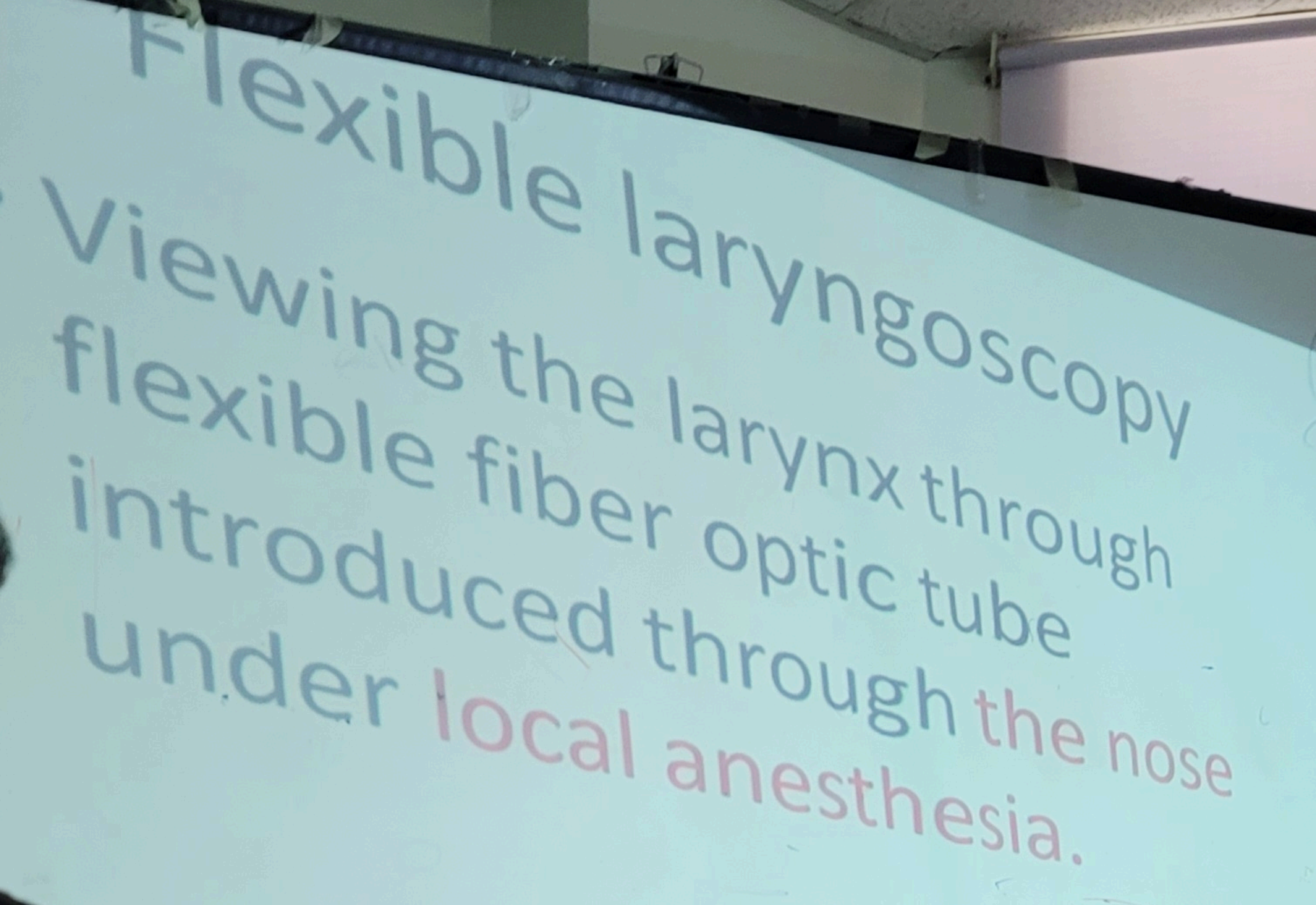




Types of lenses



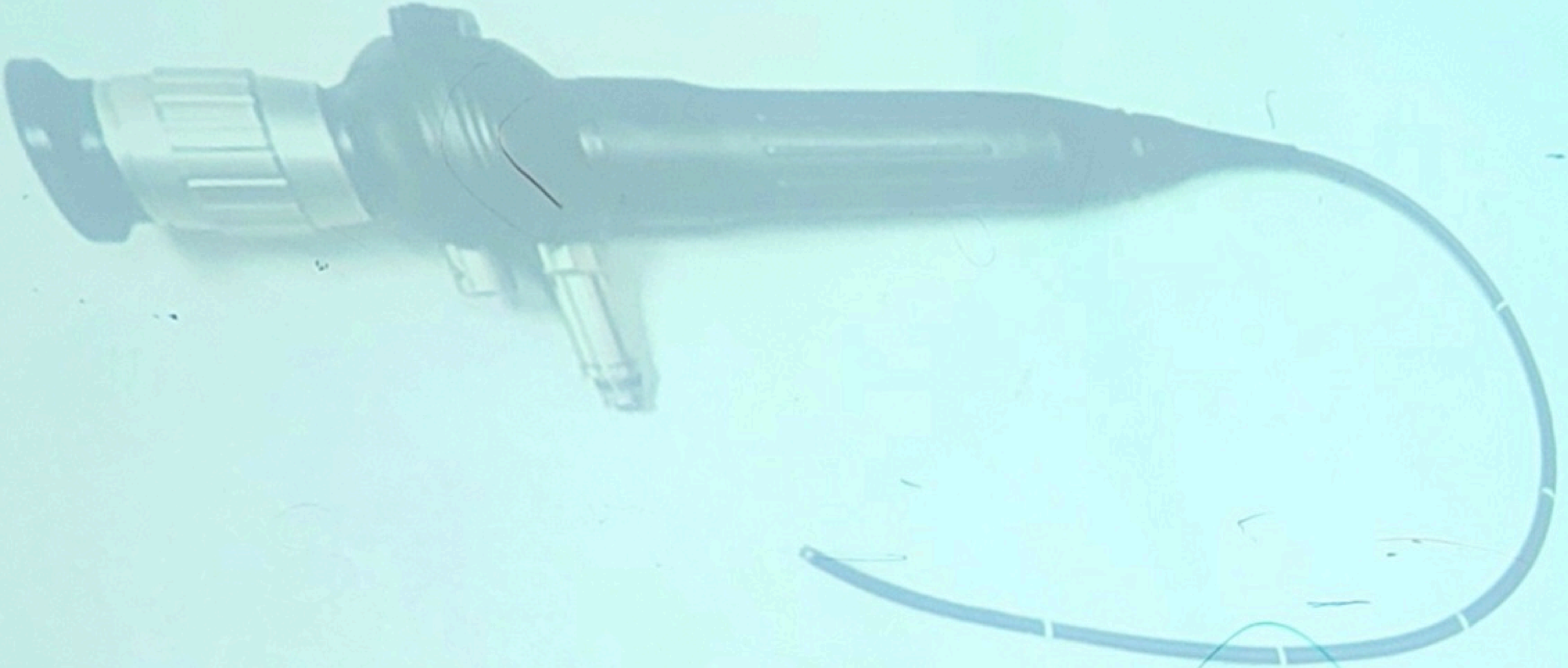
Rigid laryngoscopy

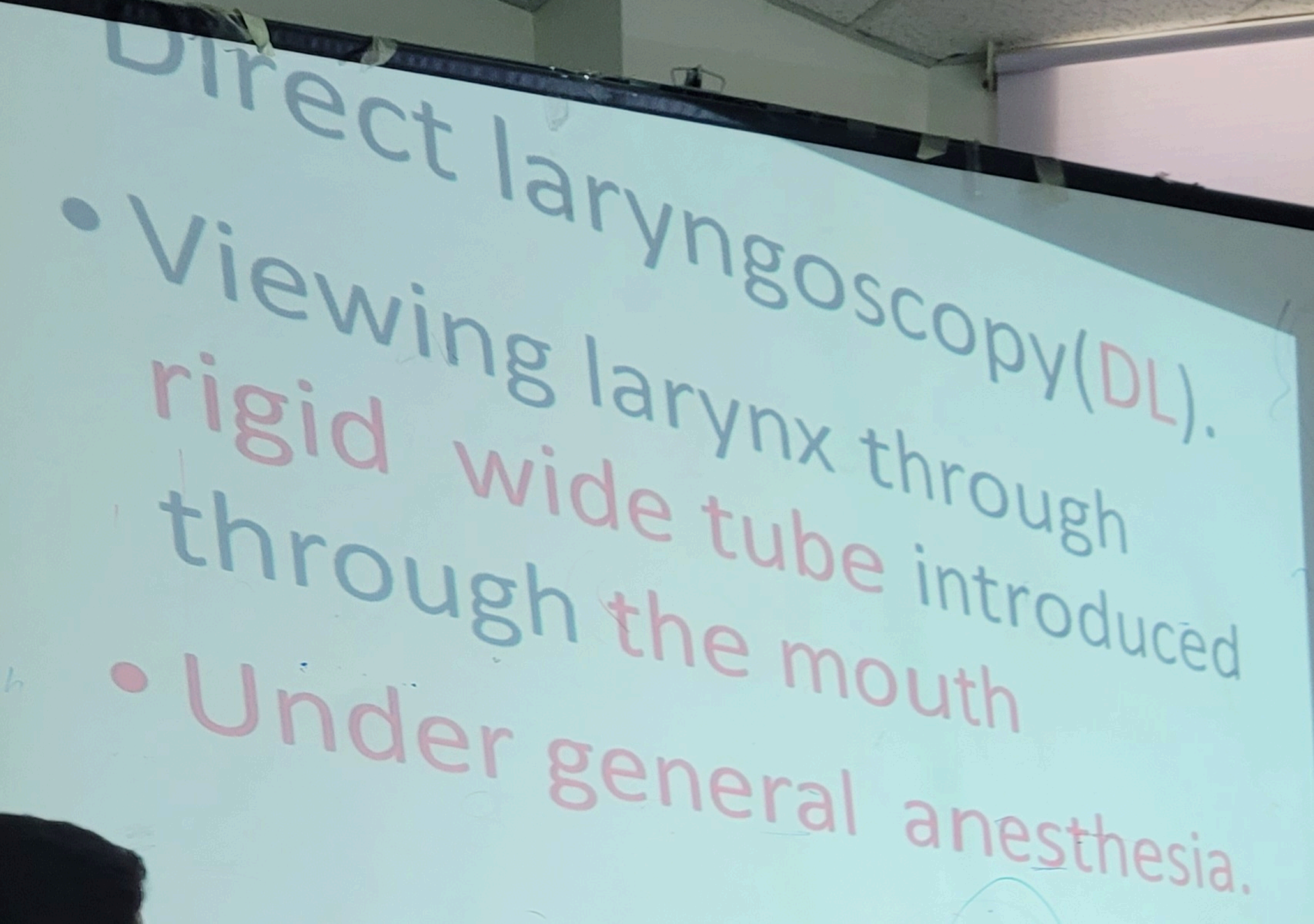


Flexible laryngoscopy

- Viewing the larynx through flexible fiber optic tube introduced through the nose under local anesthesia.

Flexible laryngoscope

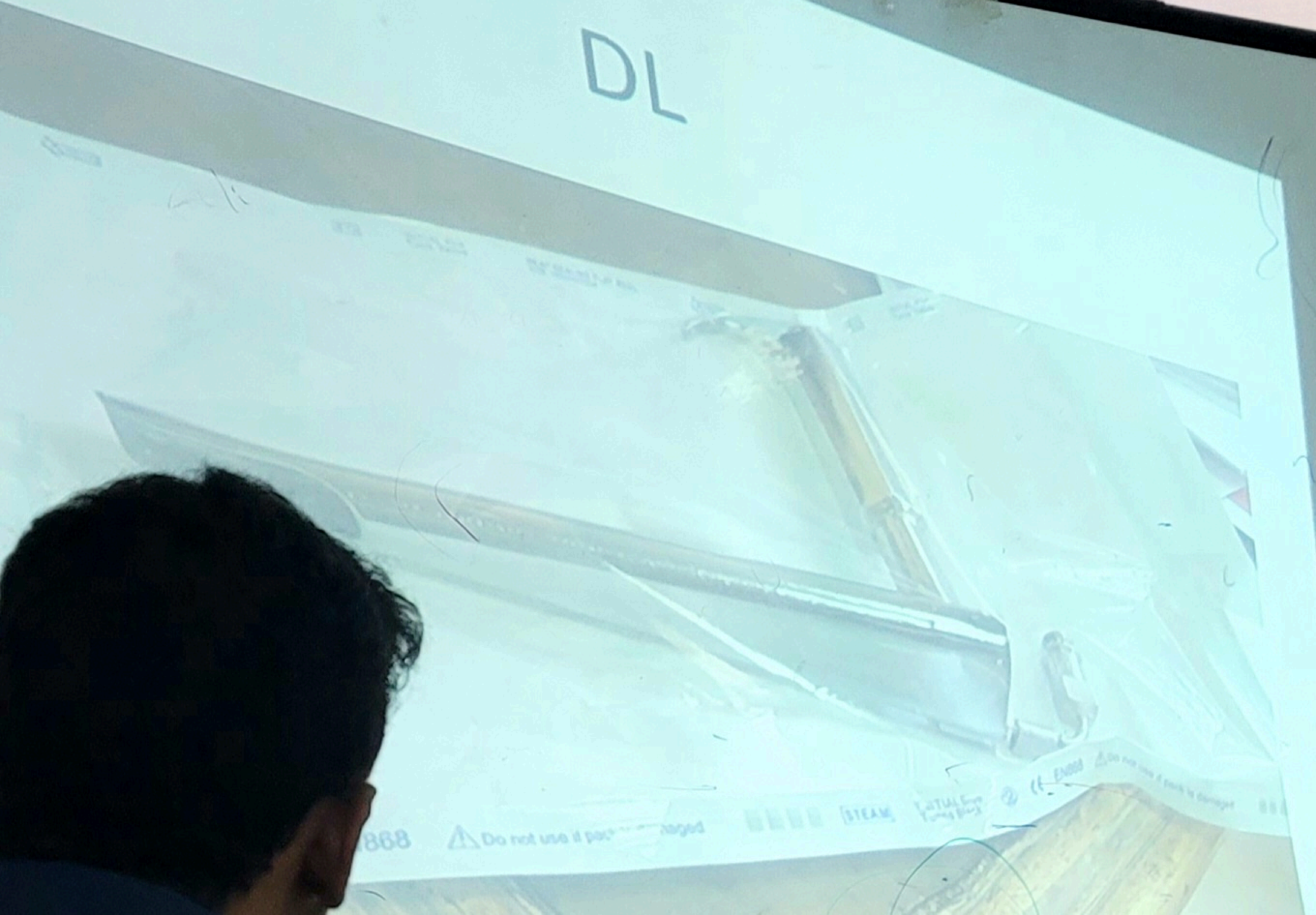


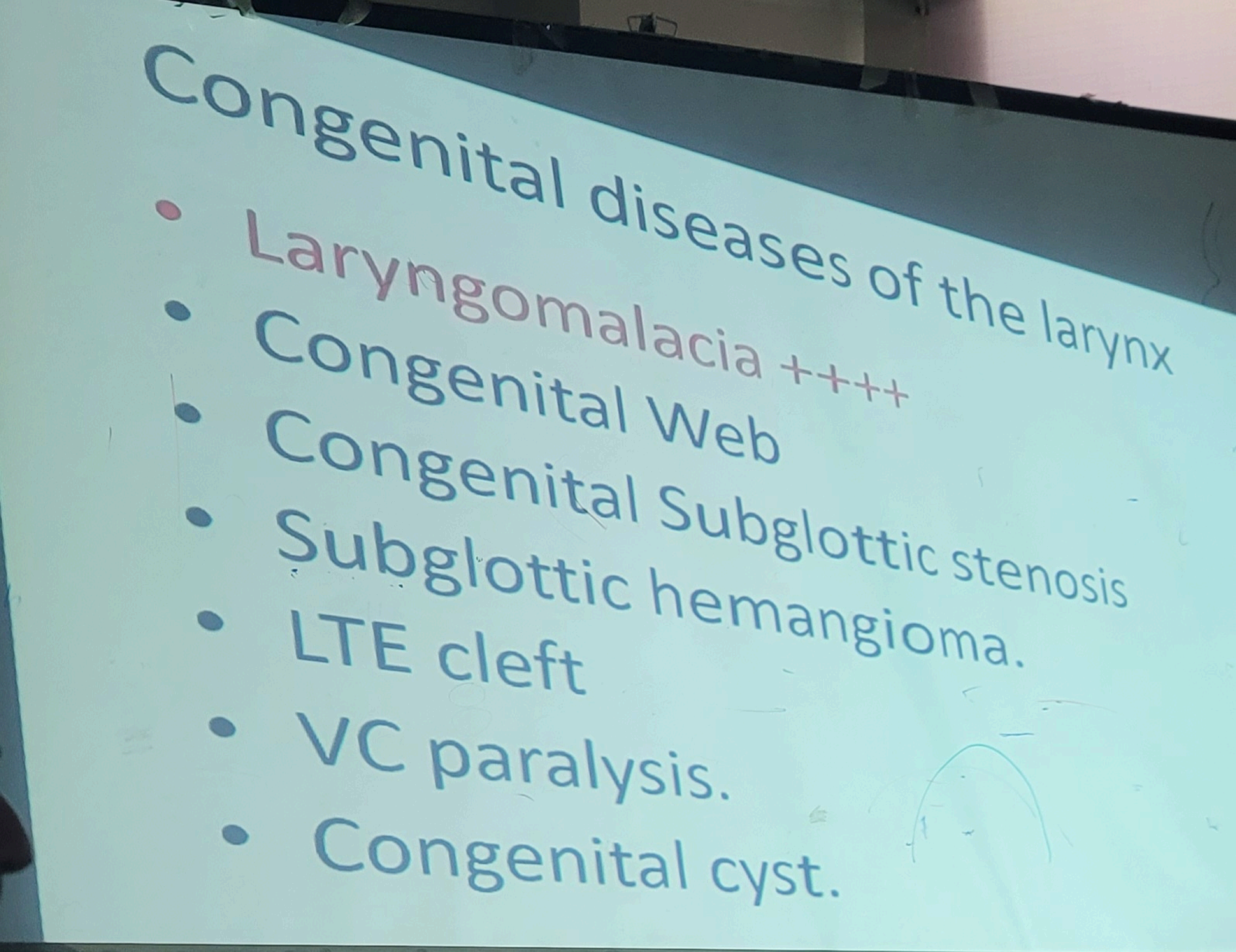


Direct laryngoscopy(DL).

- Viewing larynx through rigid wide tube introduced through the mouth
- Under general anesthesia.

DL


STEAM
EN868



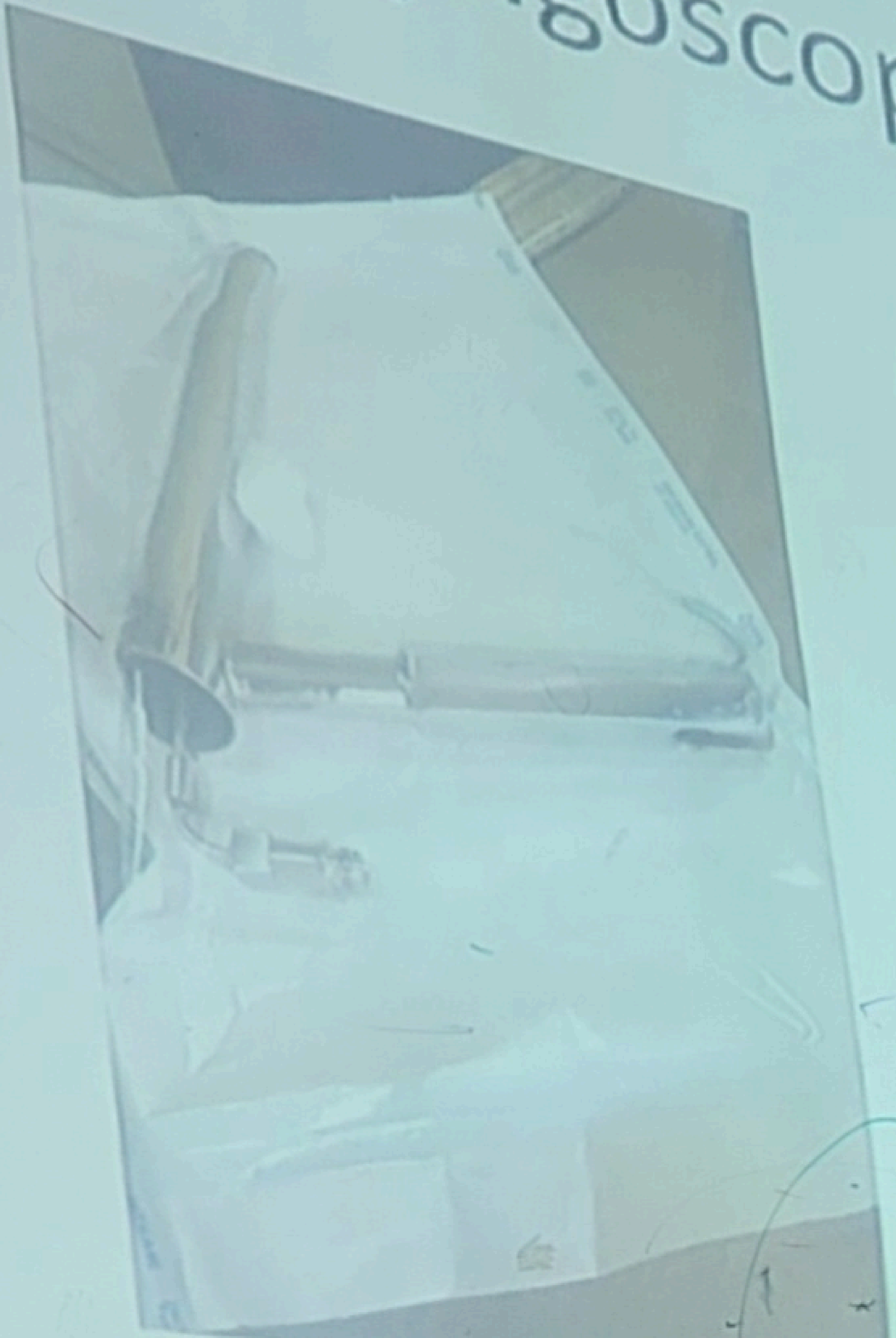
Congenital diseases of the larynx

- Laryngomalacia ++++
- Congenital Web
- Congenital Subglottic stenosis
- Subglottic hemangioma.
- LTE cleft
- VC paralysis.
- Congenital cyst.

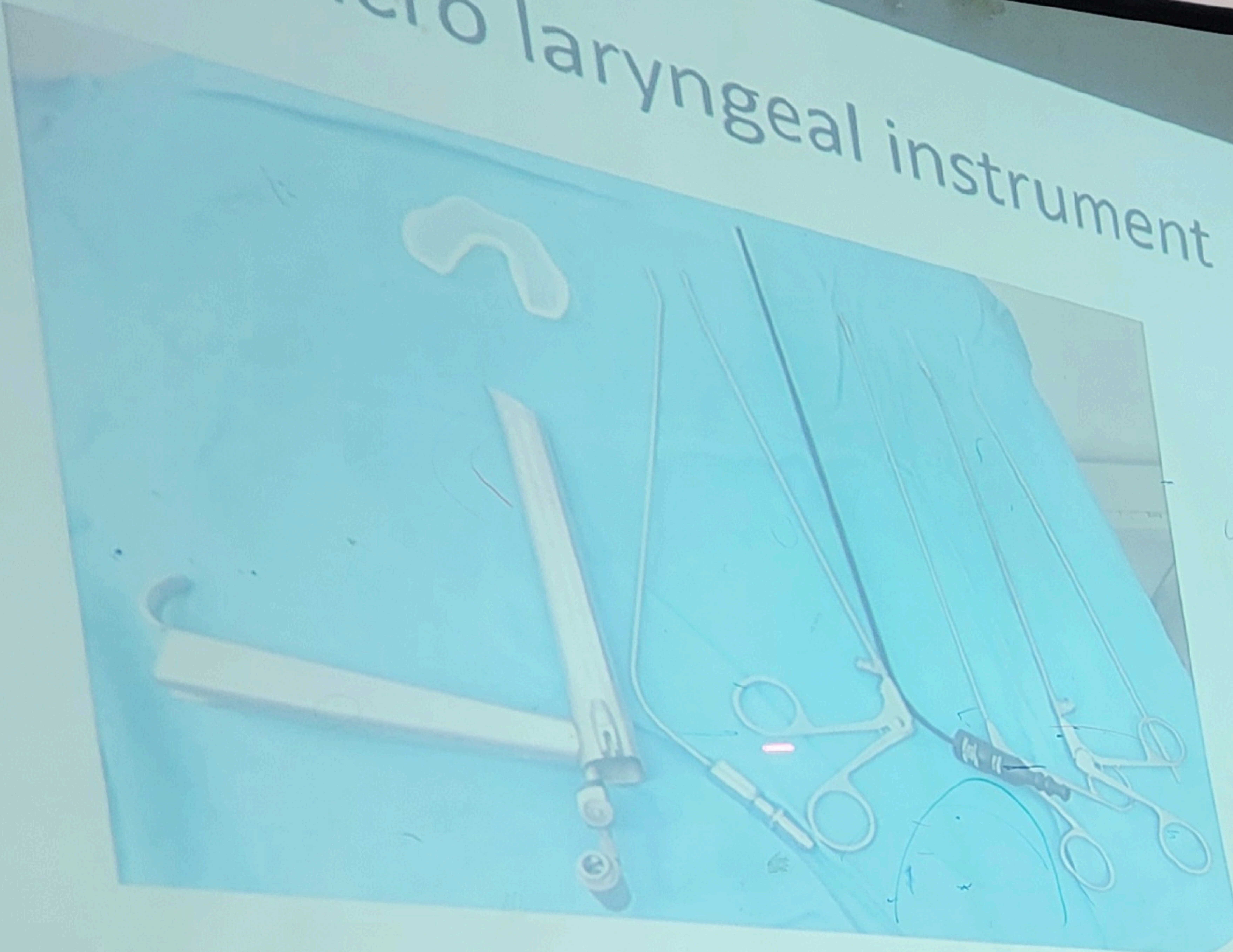
Diagnosis and treatment of congenital diseases of the larynx

- **Clinical picture**: mild or sever stridor.
  weak or hoarseness of voice.
- **Diagnosis by**:
  Flexible nasolaryngoscopy at ENT clinic or
  DL under GA.
- **Treatment**: if mild symptoms: conservative
  if sever symptoms, stridor:
  Tracheostomy, DL and MLS.

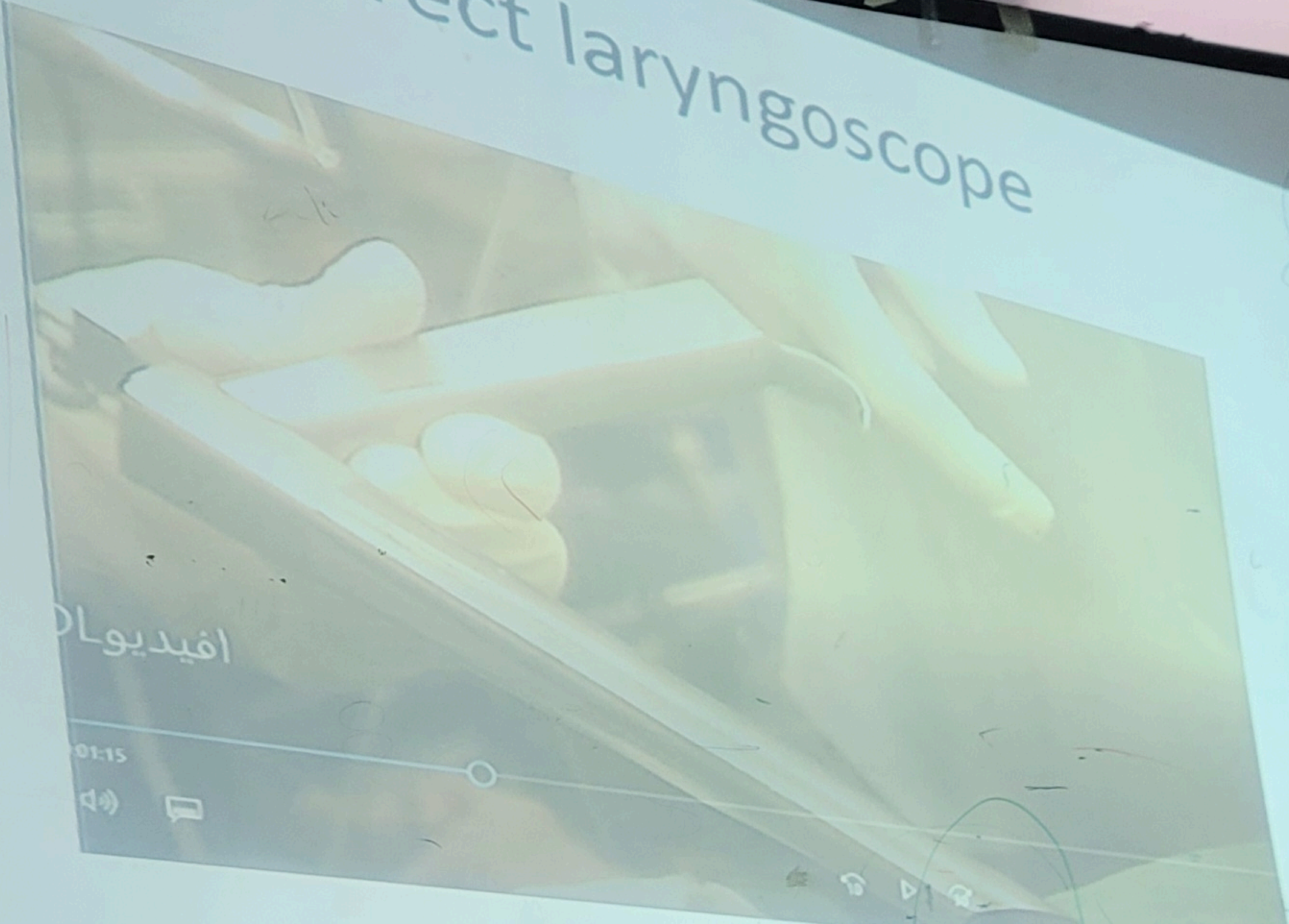
Rigid direct laryngoscope(DL)



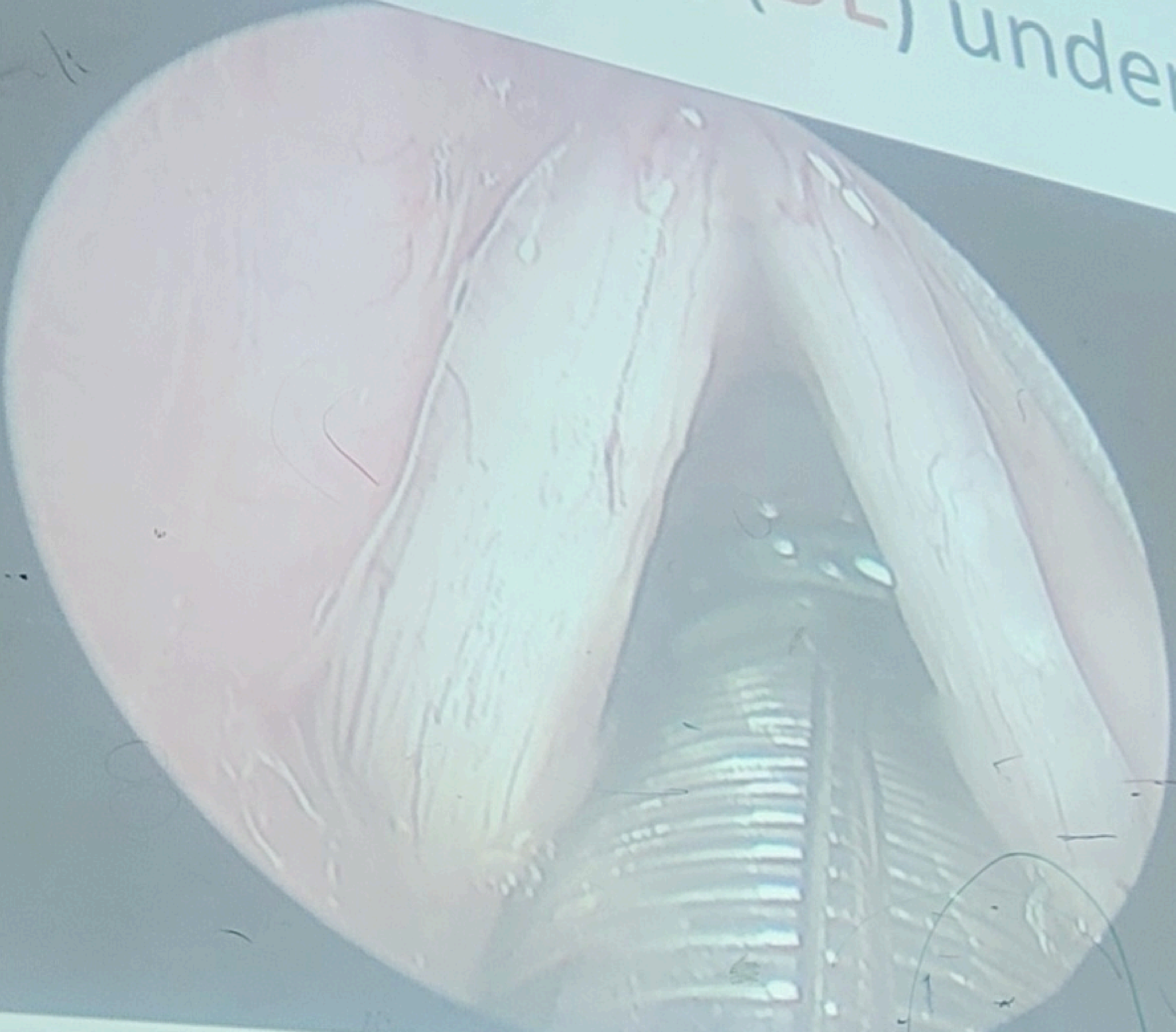
L and Micro laryngeal instrument



Direct laryngoscope


افيديوا
01:15

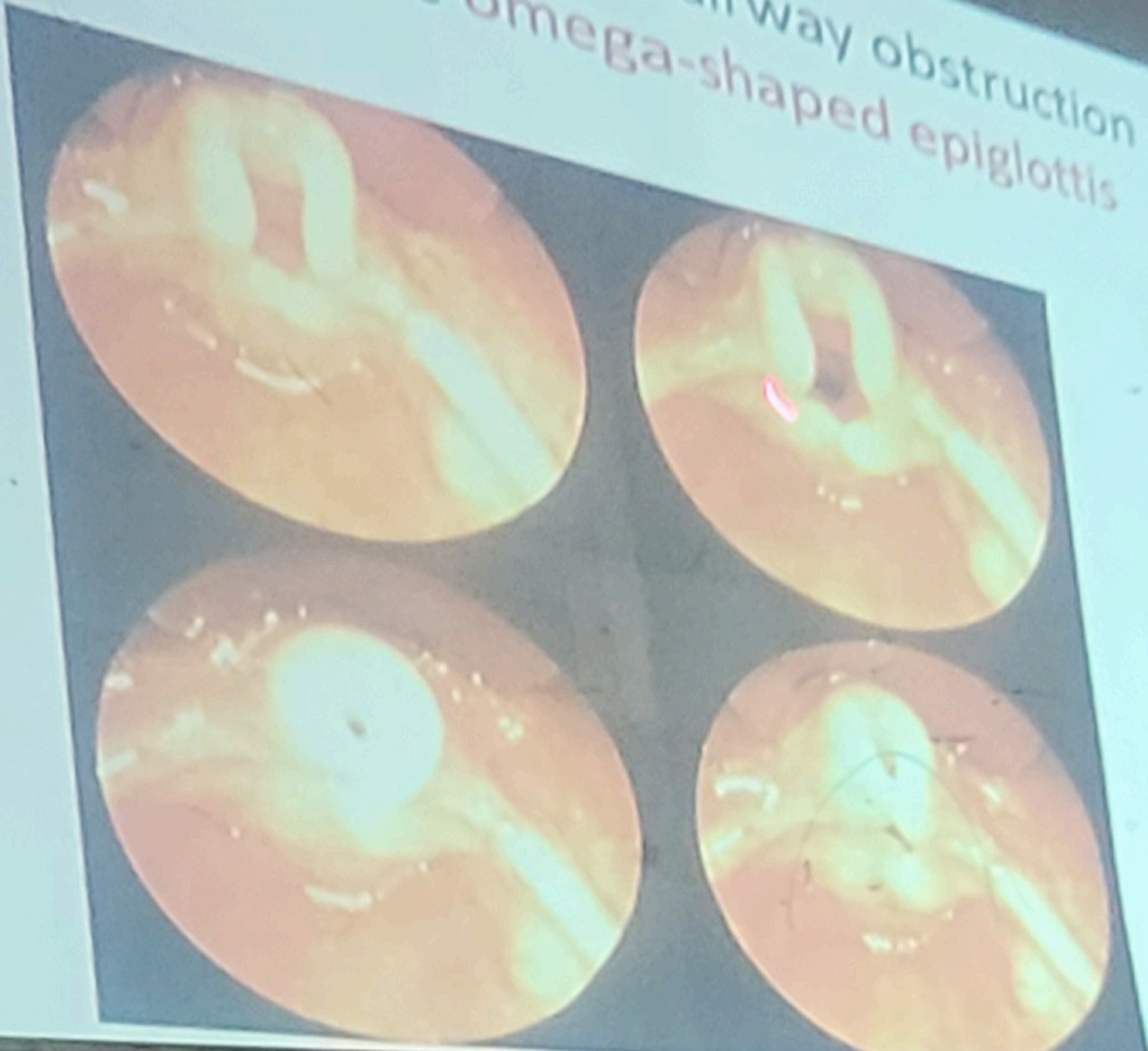
Direct laryngoscopy(DL) under GA



Laryngomalacia

- Laryngomalacia:(congenital laryngeal stridor).
- **Definition**: abnormal softening of the larynx that collapse during inspiration.

Laryngomalacia. Progressive airway obstruction on inspiration. Note omega-shaped epiglottis



Clinical picture of Laryngomalacia

- Symptoms: Stridor(inspiratory only), increased by URTI.
- No hoarseness as the larynx is normal during expiration with no true vocal cords affection.

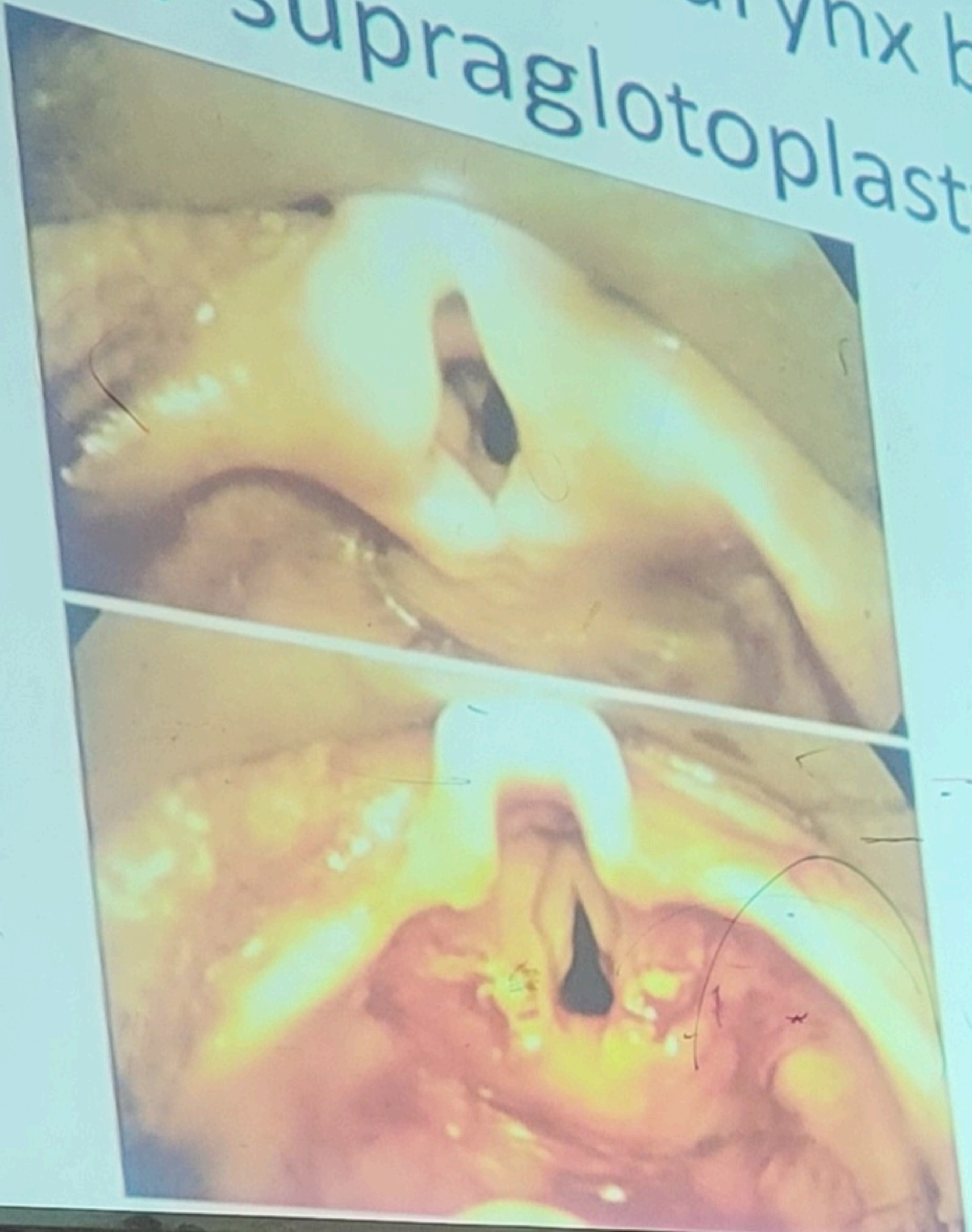
Clinical picture of Laryngomalacia

- Signs: flexible laryngoscopy or DL under GA shows: collapse of the larynx during inspiration but it opens normally during the expiration

Treatment of laryngomalacia

- **In mild stridor**: No treatment as it improved spontaneously but avoid URTI.
- **In sever stridor:**
- Endotracheal intubation(ETI) to relive stridor.
- Tracheostomy.
- DL and MLS: excision of the redundant mucosa by laser.

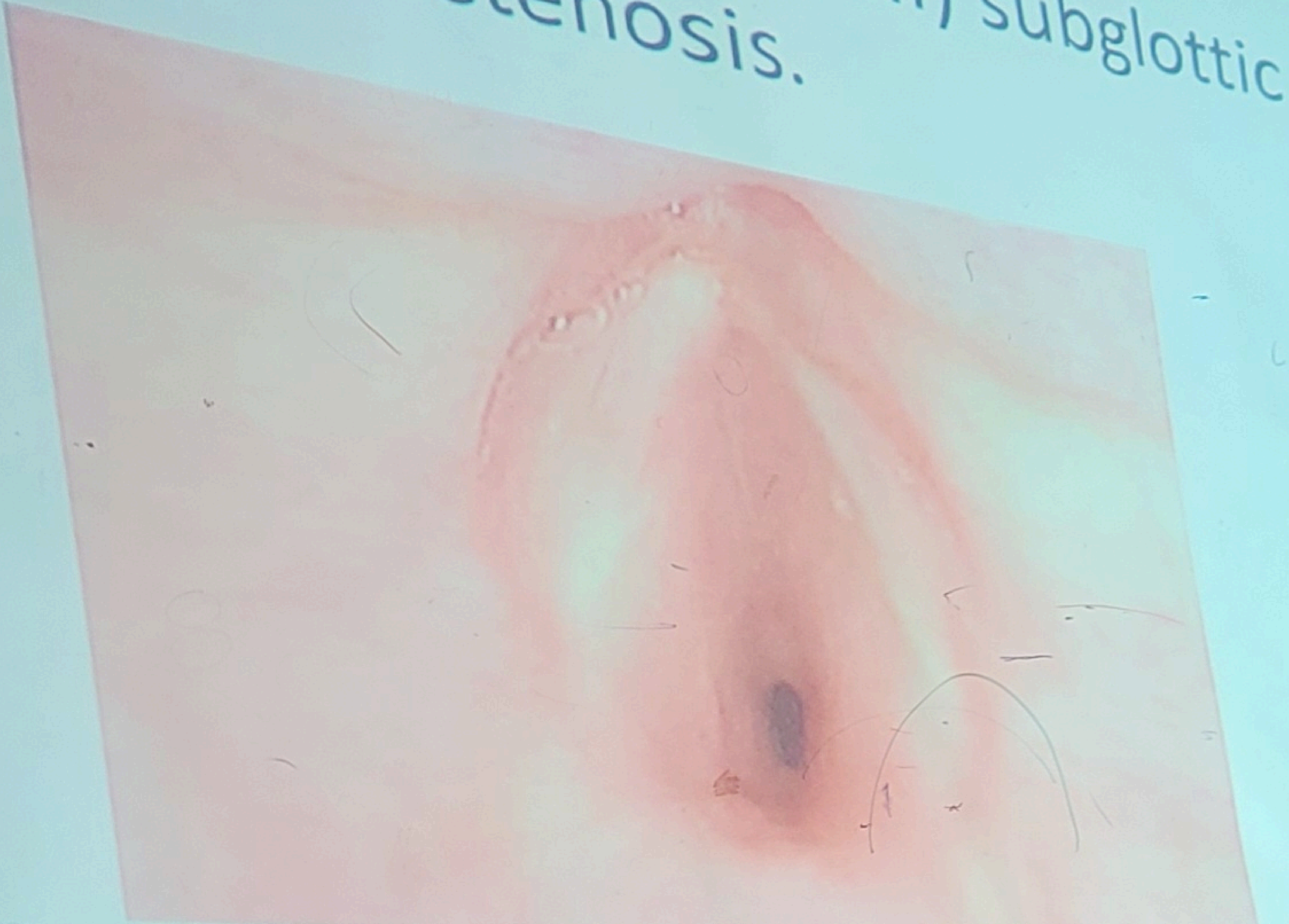
yngomalacia. Infant larynx before and after supraglotoplasty



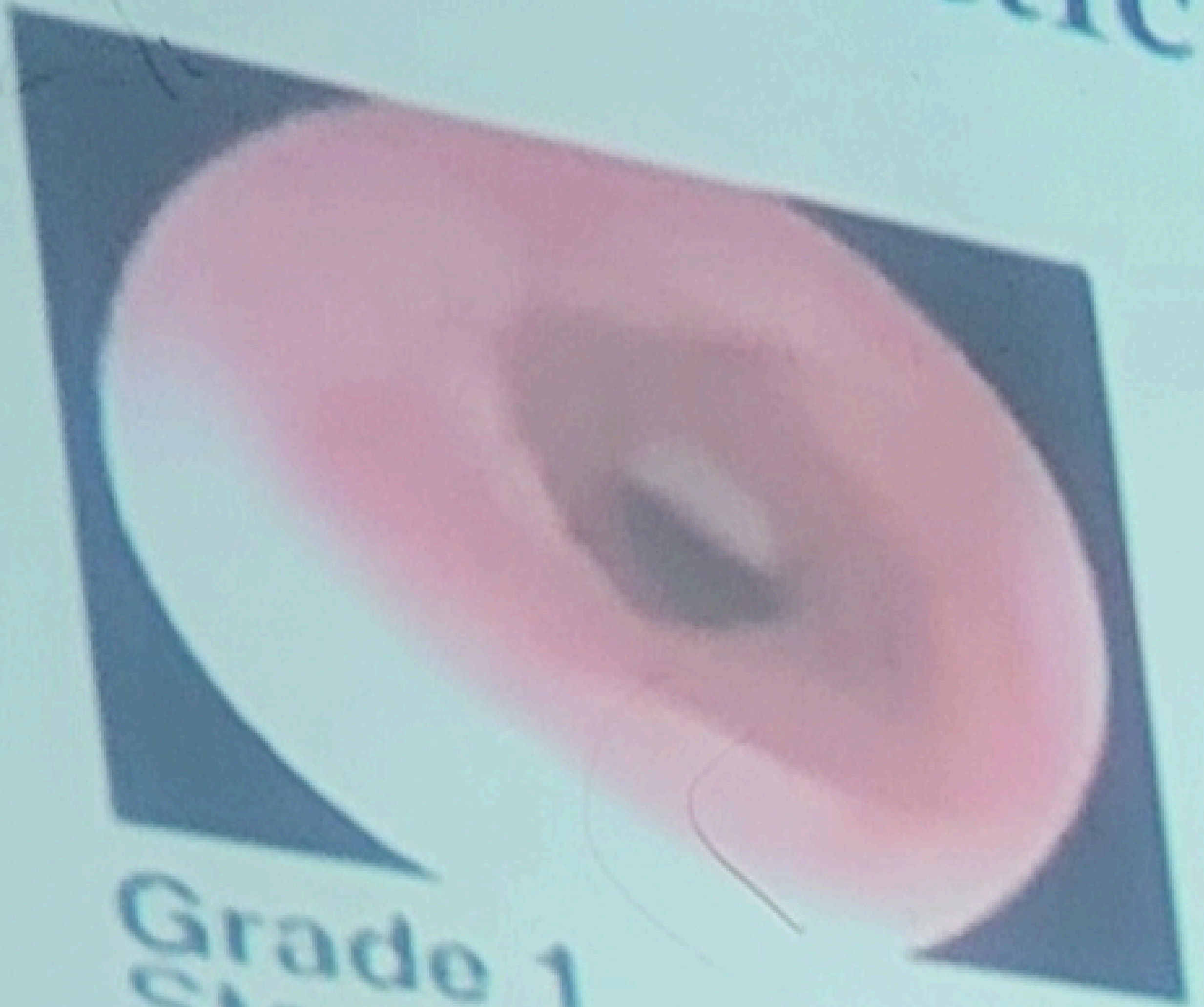
Congenital Subglottic stenosis

- **Definition** : narrowing of subglottic area.
- **Clinical picture:**
- **Symptoms:** stridor (biphasic), increased by URTI.
- No hoarseness as the VC are normal
- **Signs:** flexible laryngoscopy or DL shows the stenosis.

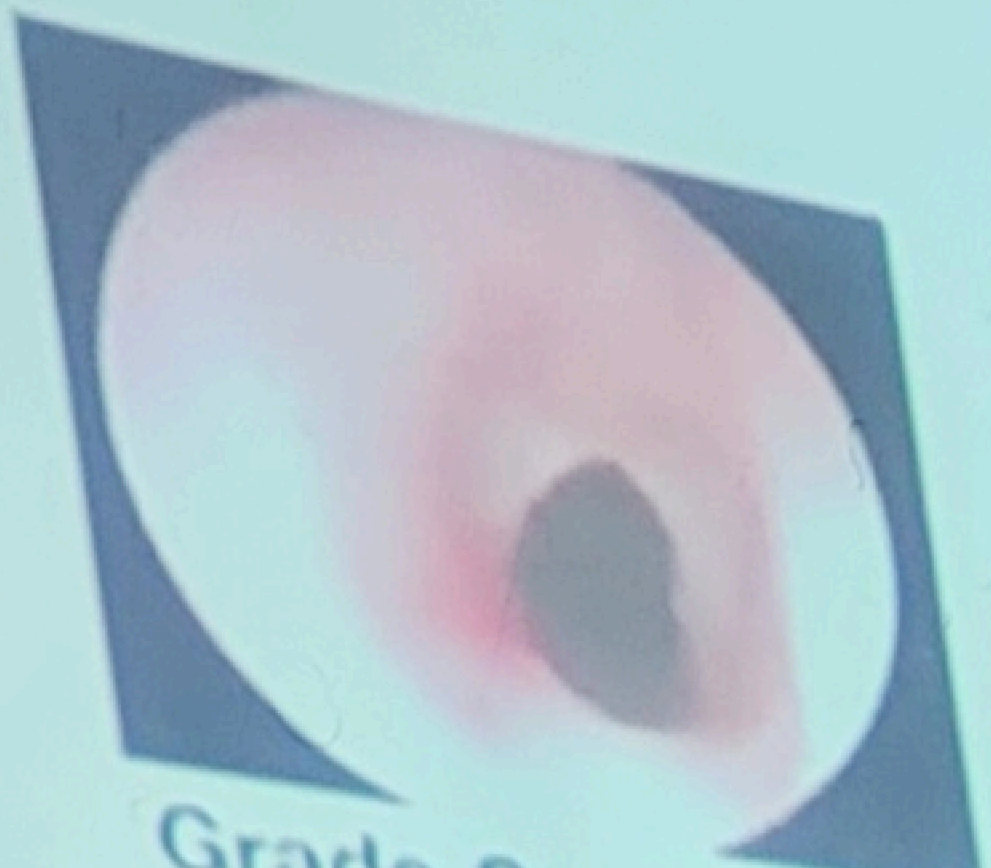
Severe congenital (grade III) subglottic stenosis.



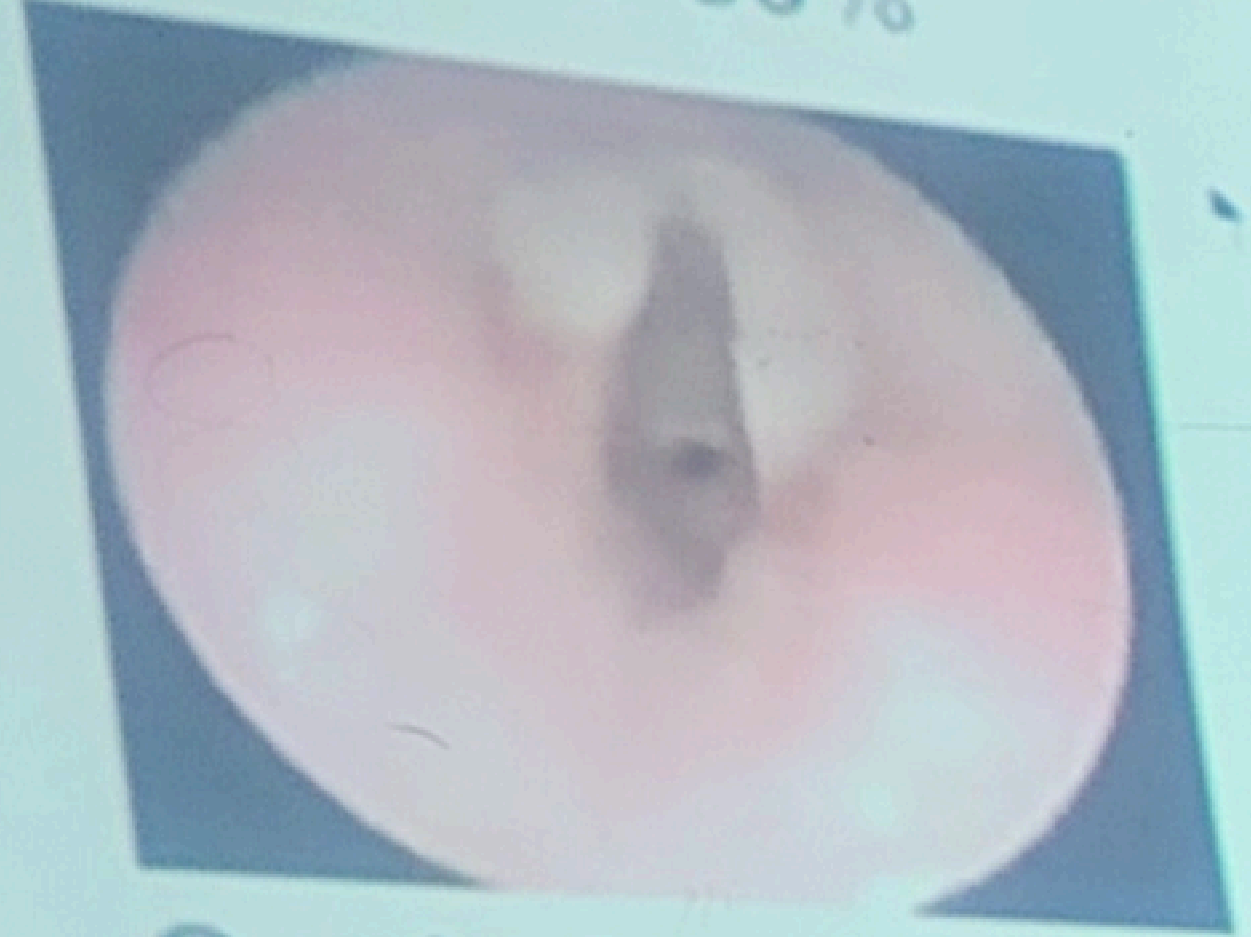
Subglottic Stenosis



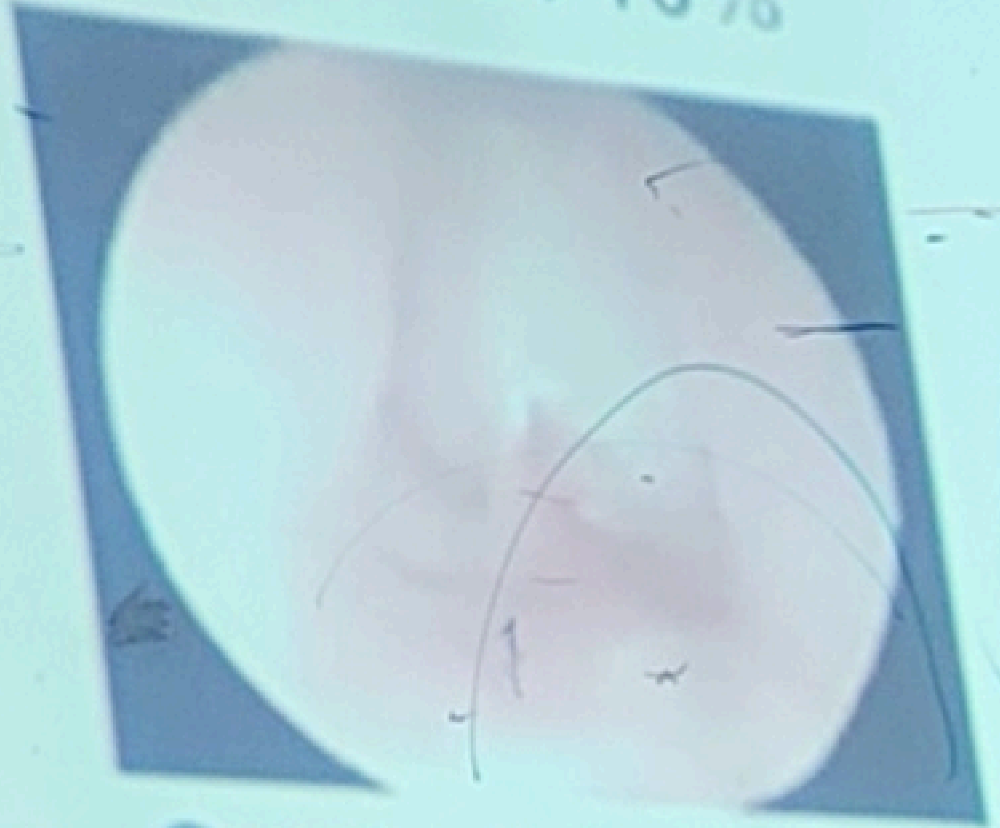
Grade 1
Stenosis 0-50%



Grade 2
Stenosis 51-70%



Grade 3
Stenosis 71-99%



Grade 4
Stenosis 100%

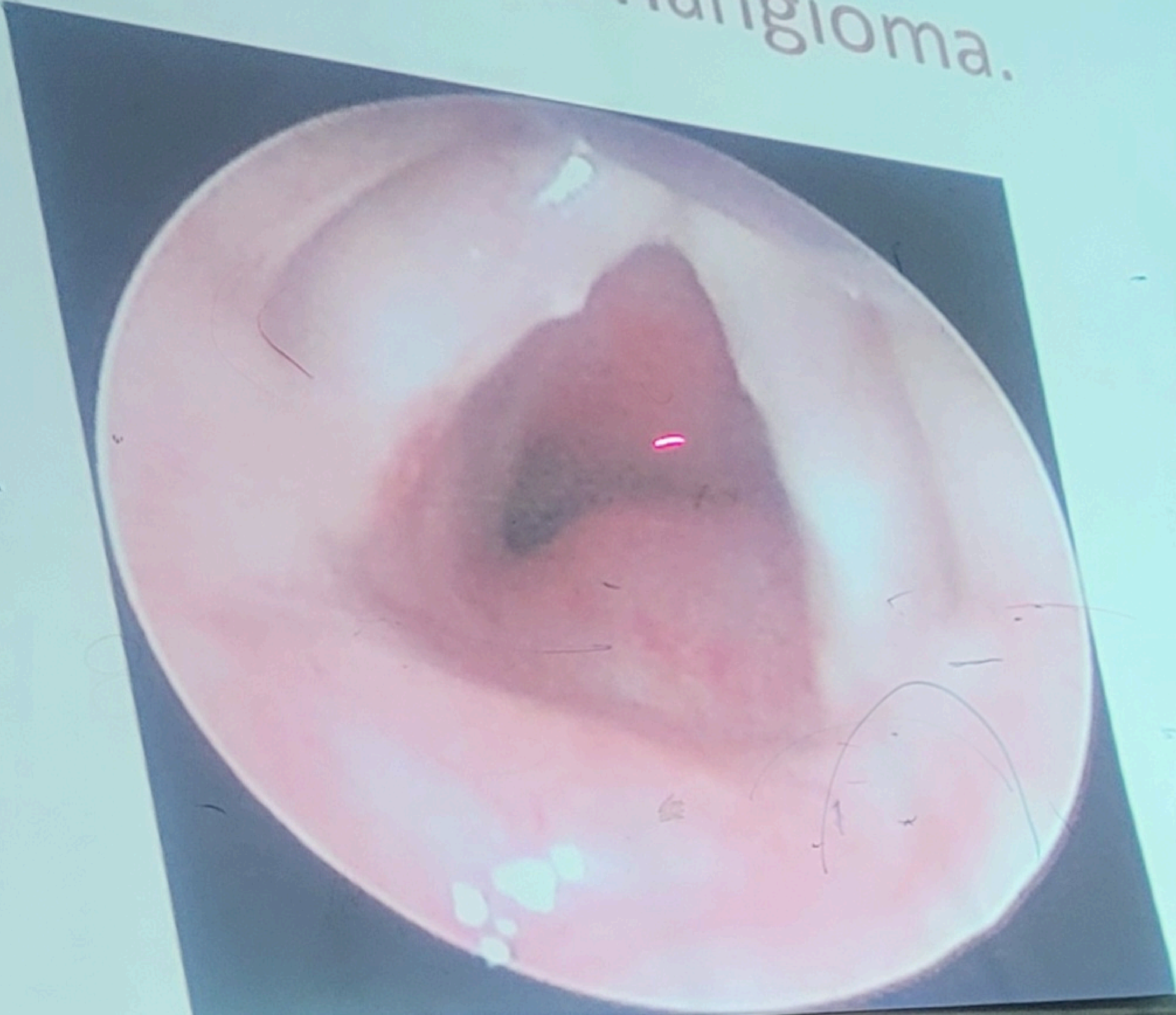
Treatment of SGS

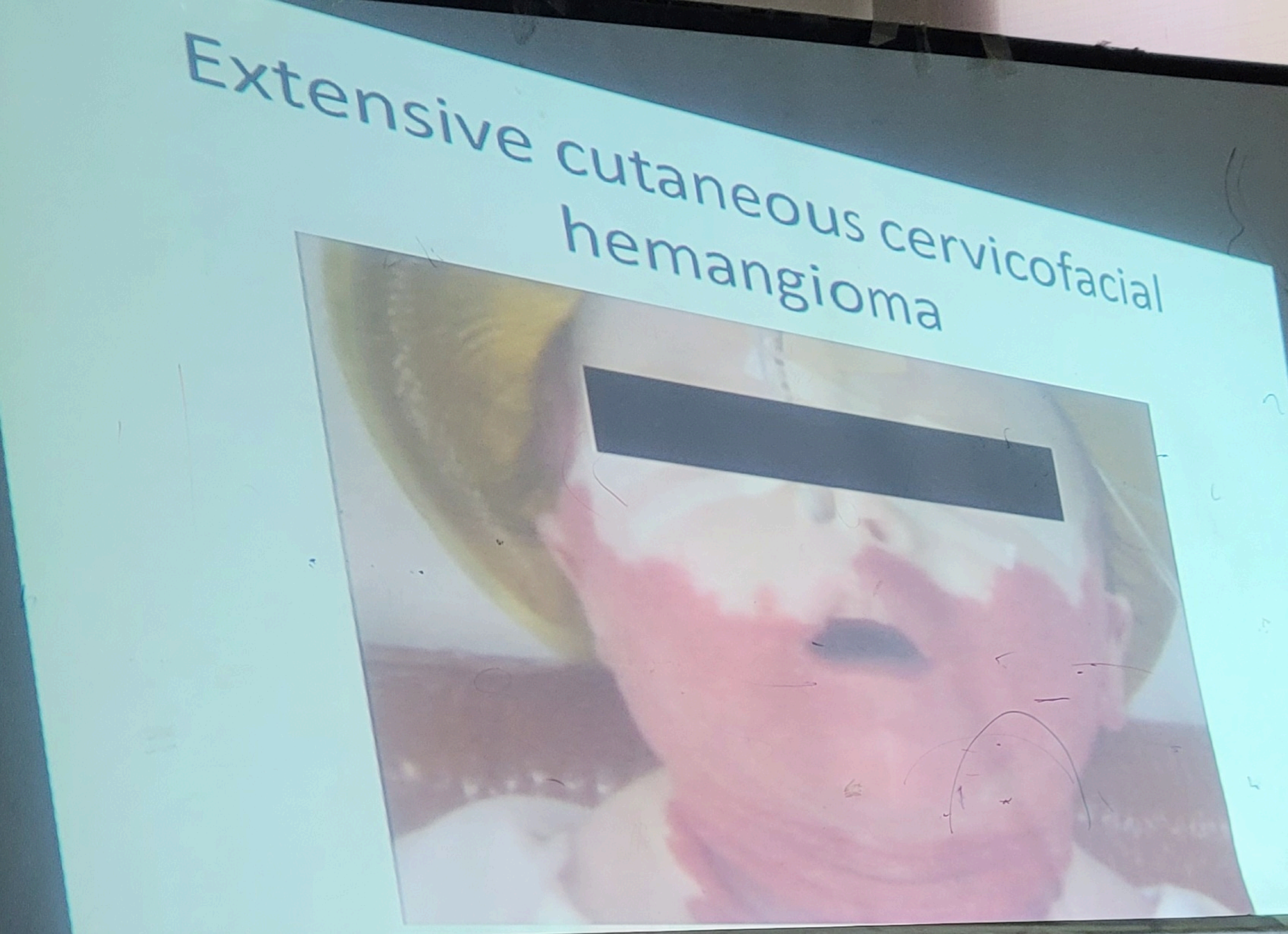
- Tracheostomy in severe stridor.
- DL and MLS: with removal of stenosis by laser.
- Laryngofissure: if laser failed as in thick stenosis.

Subglottic hemangioma

- **Clinical picture:**
- Symptoms: stridor (biphasic),
- No hoarseness as the VC are normal
- Signs: flexible L. or DL shows purple subglottic mass.

Subglottic hemangioma.

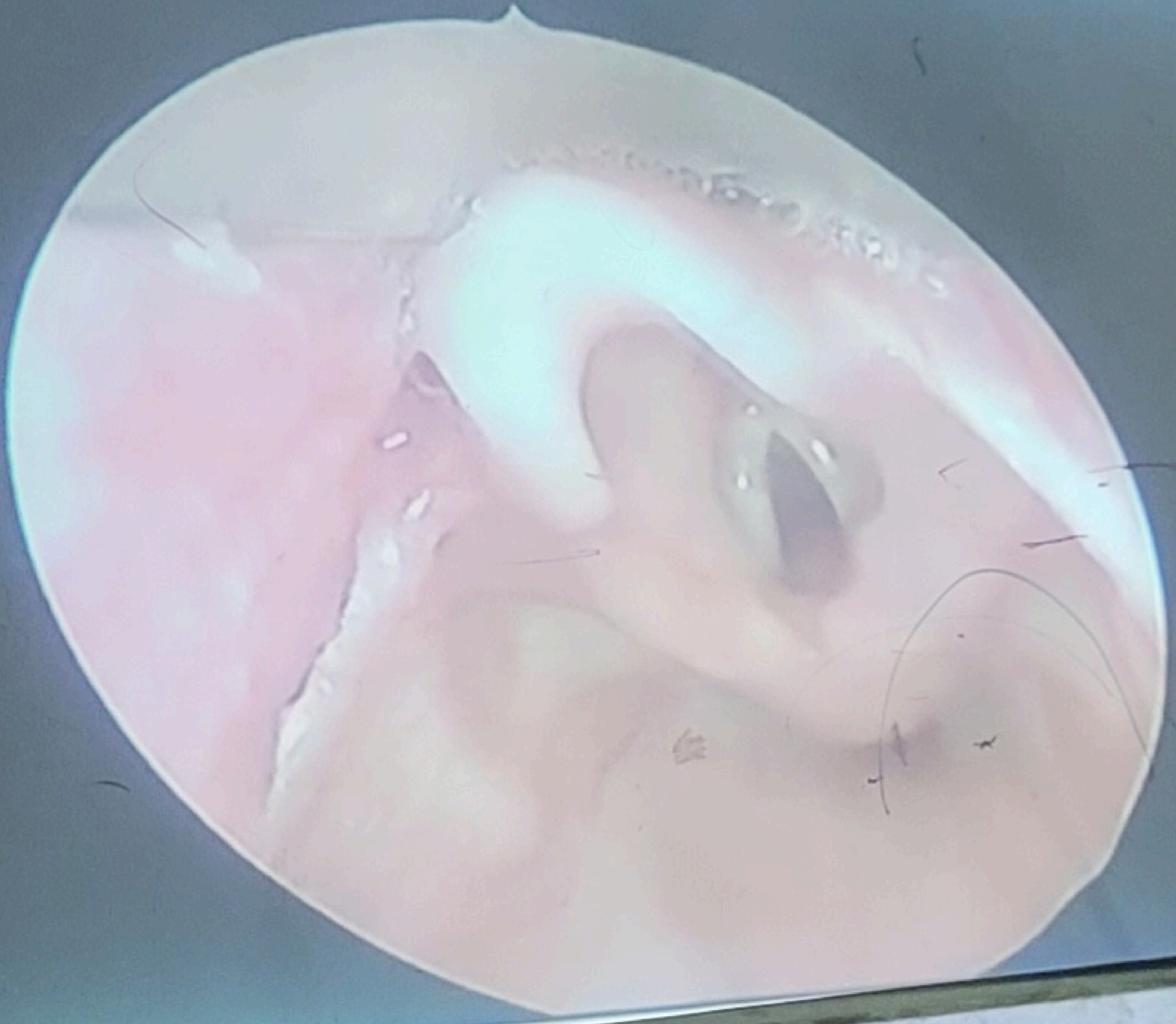




Extensive cutaneous cervicofacial hemangioma

[redacted]

Subglottic hemangioma



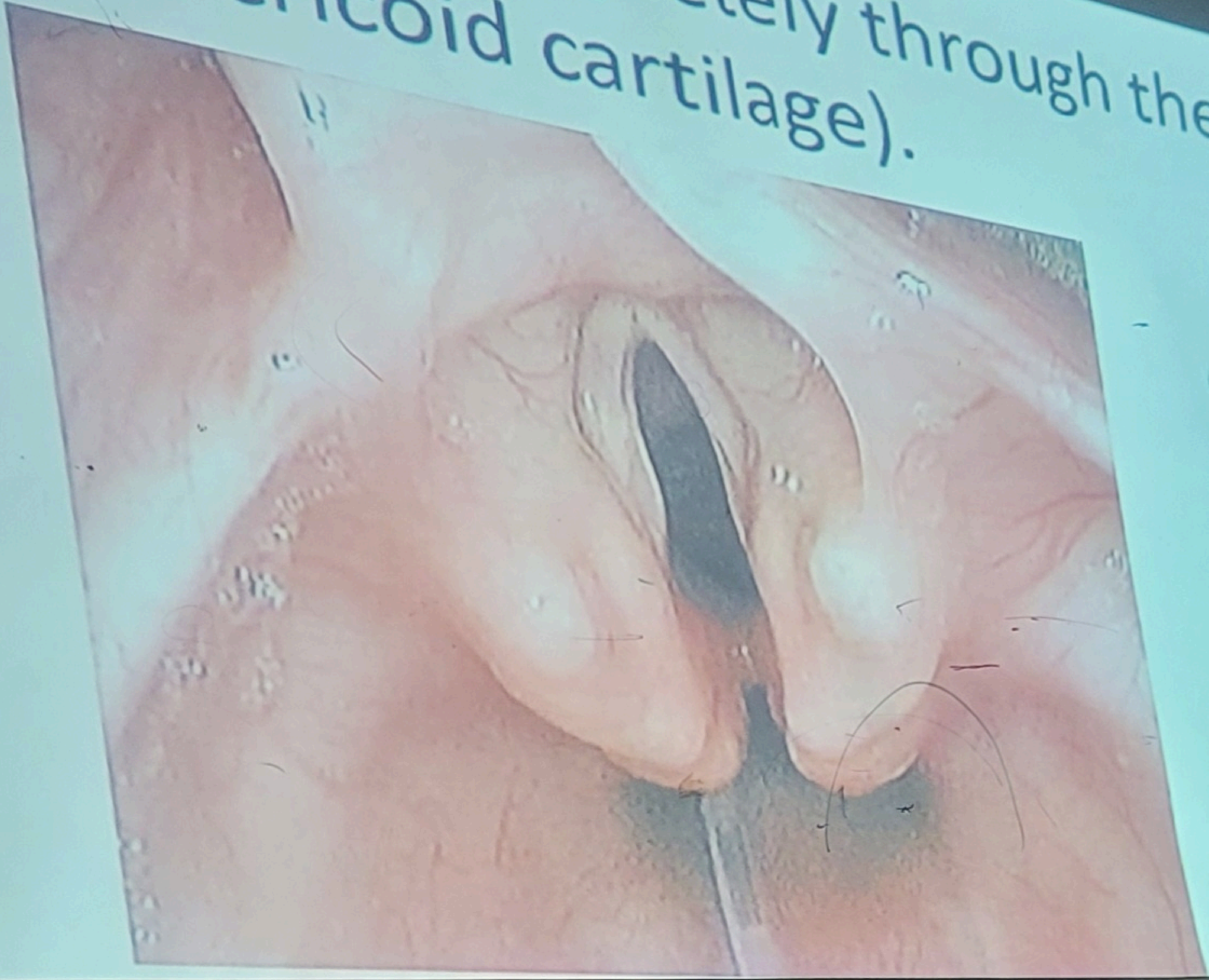
Treatment of hemangioma

No treatment as it improves spontaneously

Tracheostomy in sever stridor.

DL and MLS: excision of the mass by laser, in sever symptoms.

Laryngeal cleft completely through the cricoid cartilage).



Vocal cord paralysis

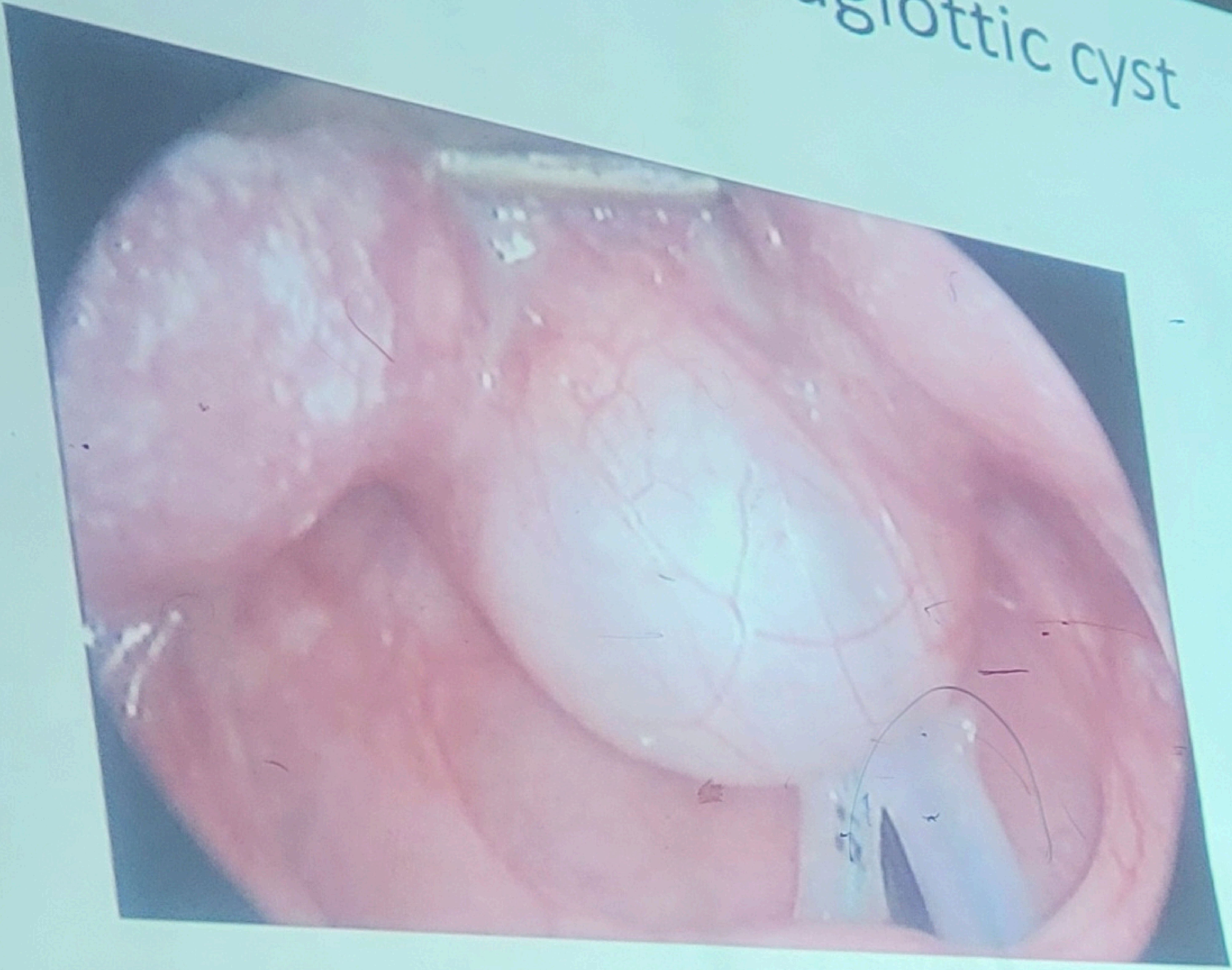
- Unilateral
- Bilateral
- Due to birth trauma(brain injuries).

Congenital cyst

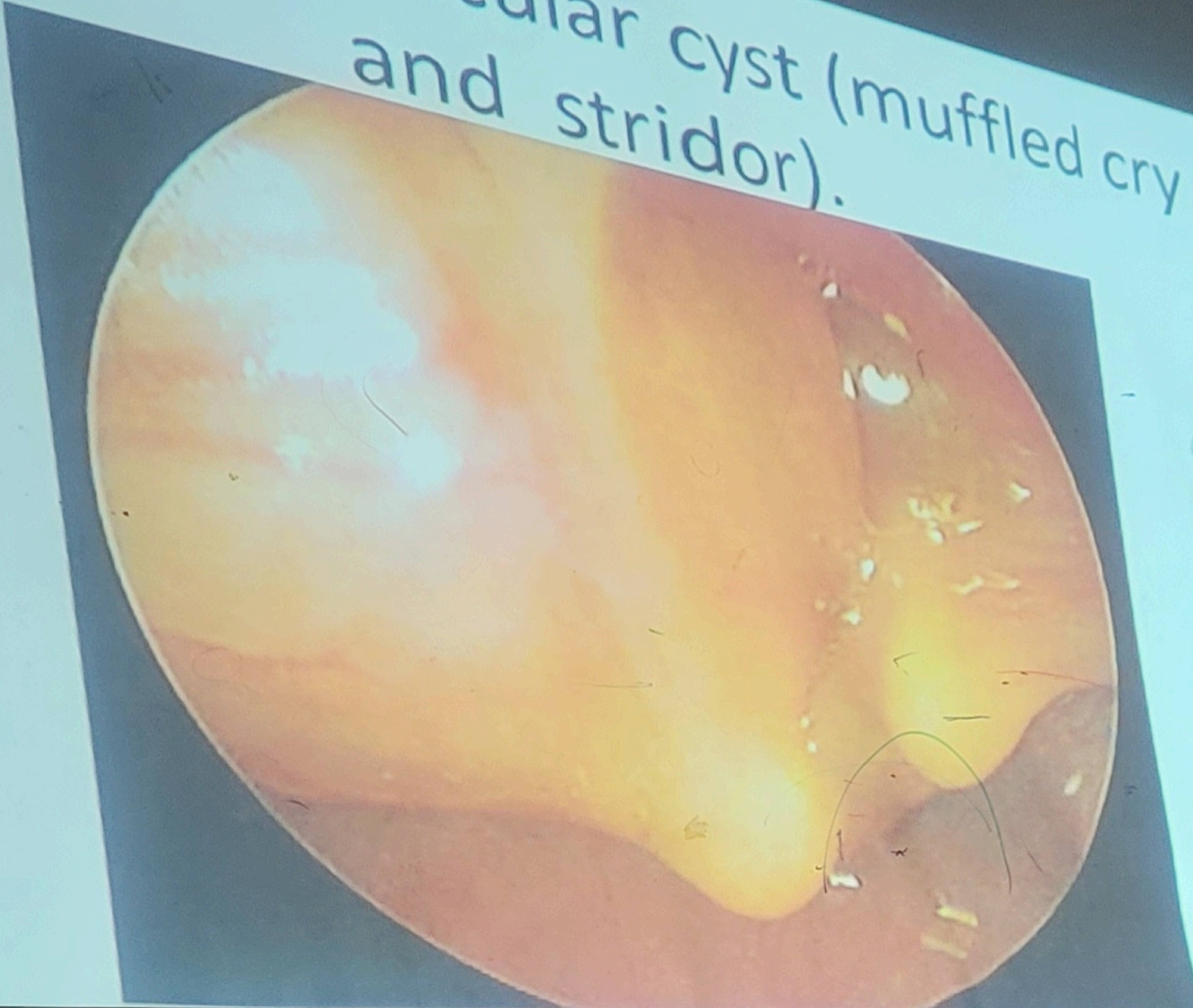
- Cyst at aryepiglottic fold.
- Clinical picture:
- **Symptoms:** Stridor(inspiratory)

  No hoarseness as the VC are normal except in large cyst.
- **Signs:** flexible L. or DL. shows the cyst.

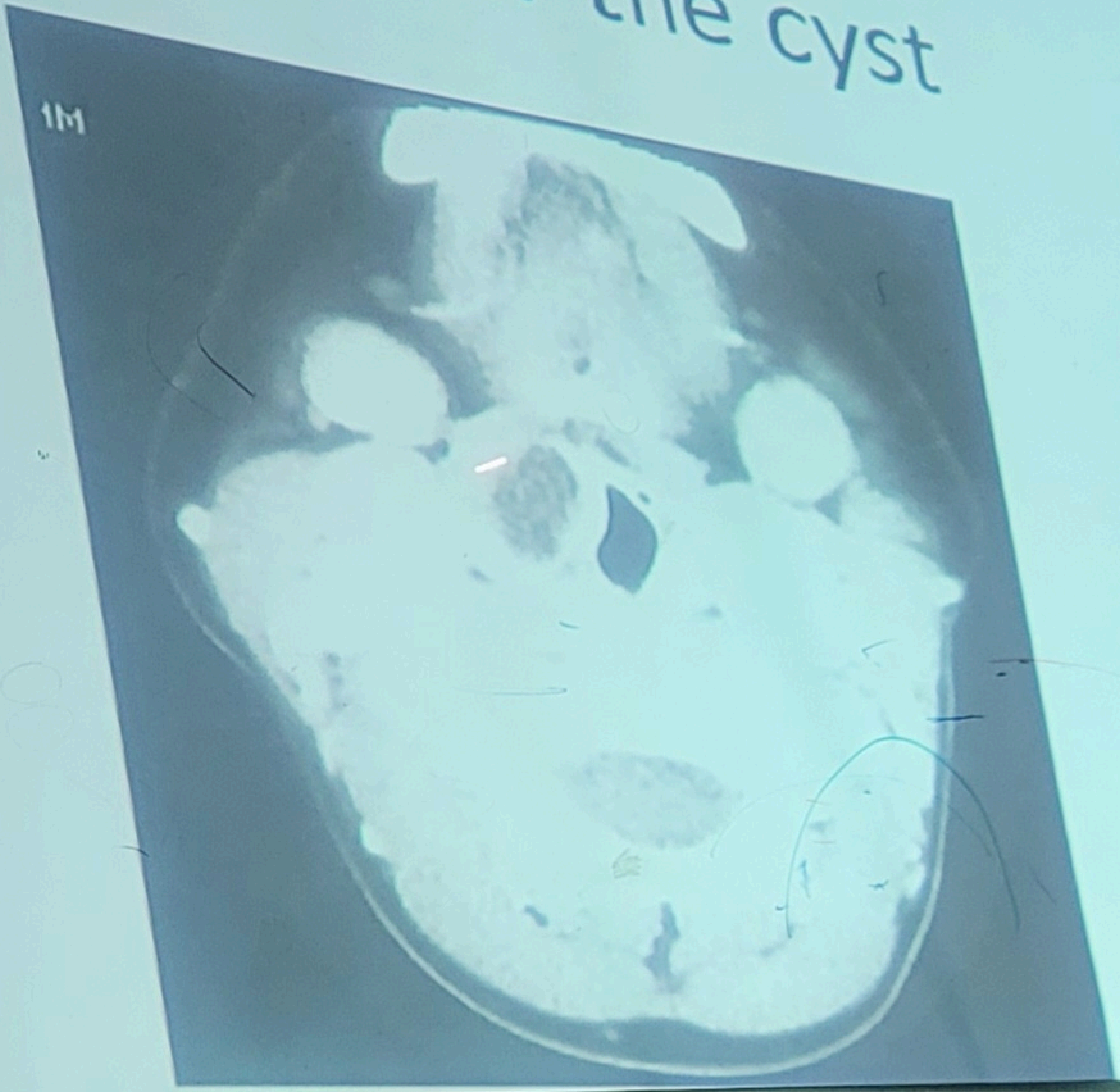
Vallecular cyst , supraglottic cyst



Left lateral saccular cyst (muffled cry and stridor).



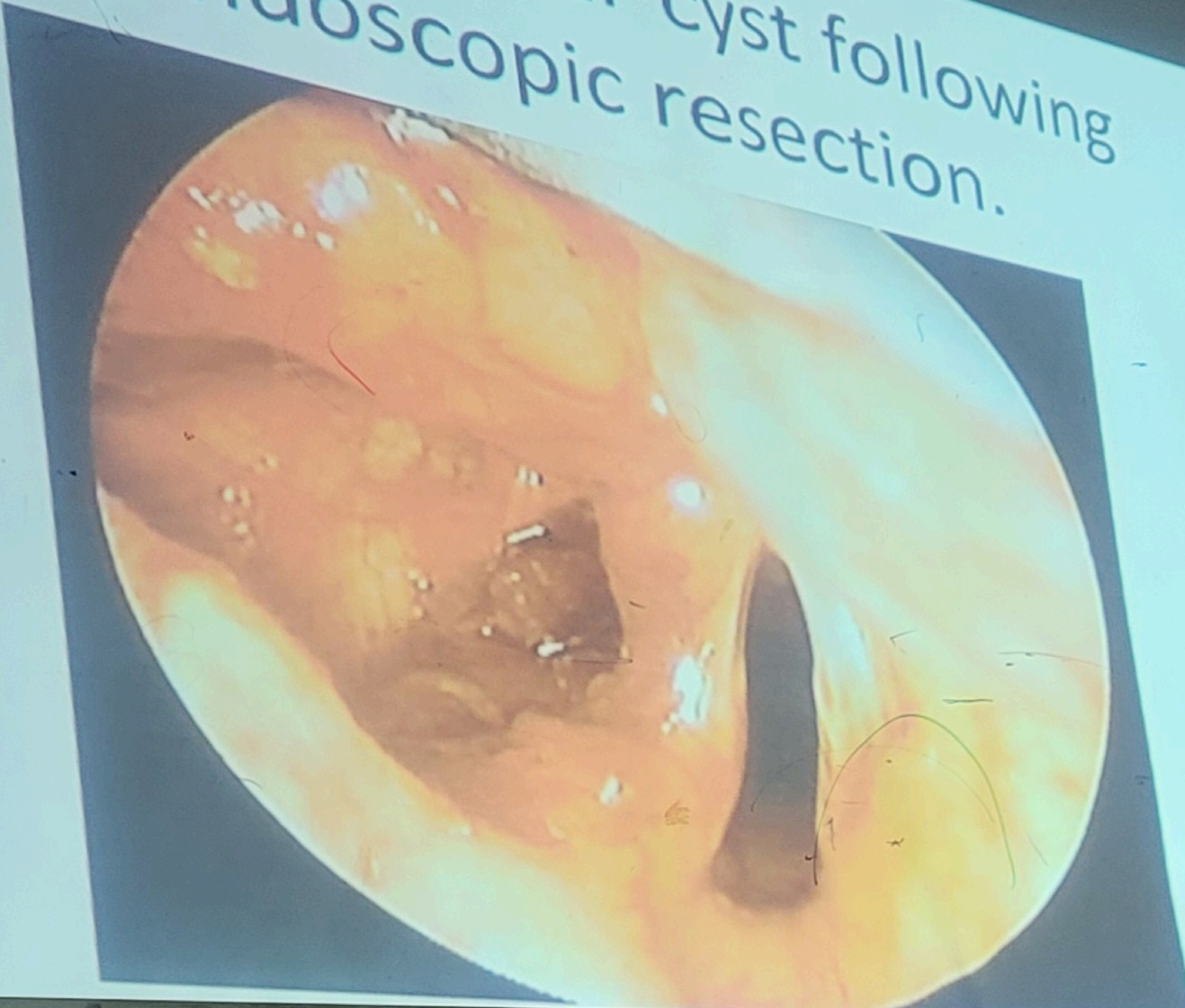
CT scan of the cyst



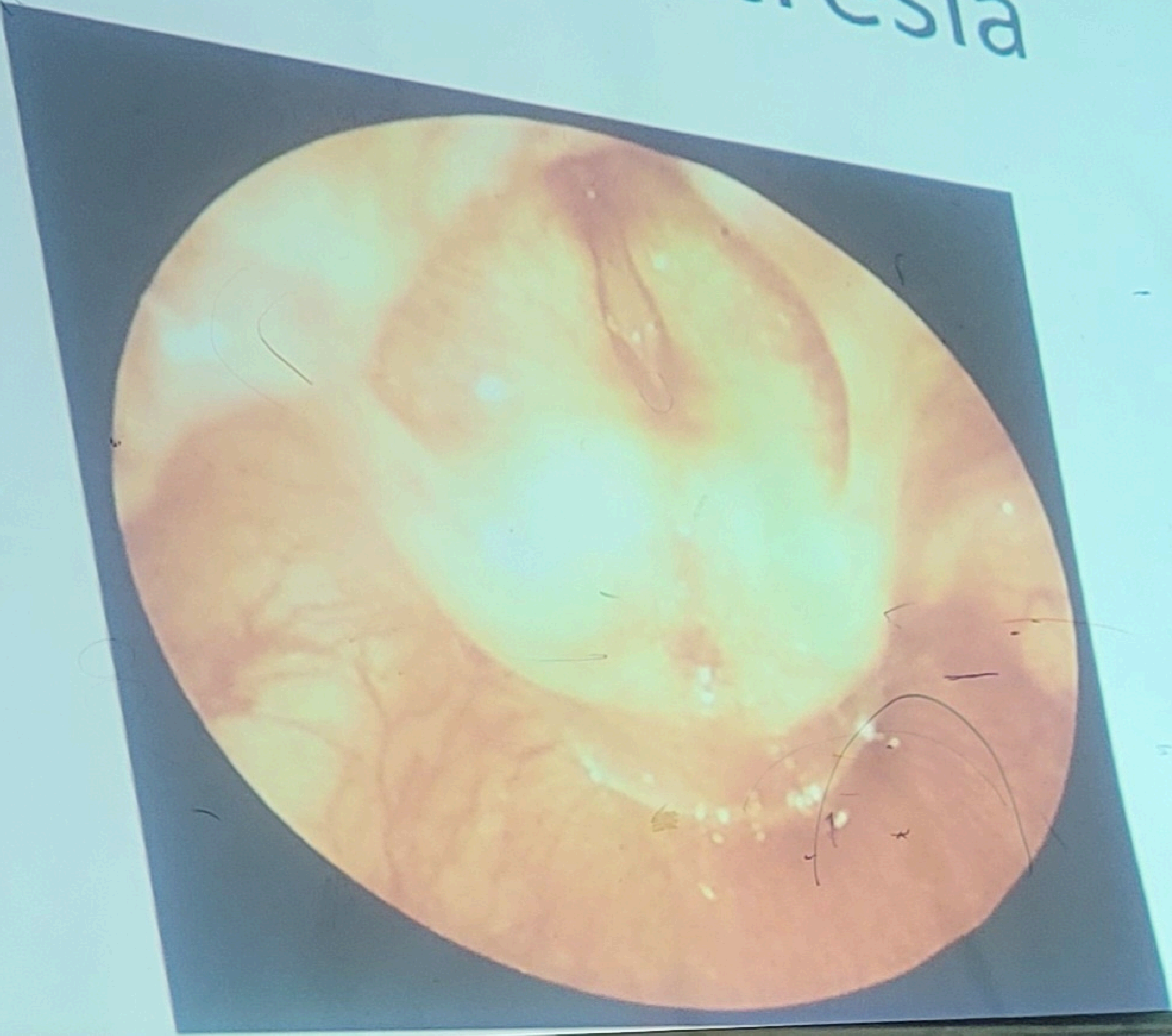
Treatment Congenital cyst

- Tracheostomy in sever stridor.
- DL and MLS: excision of the cyst by laser or conventional.

Area of saccular cyst following endoscopic resection.



Laryngeal atresia



Diagnosis and treatment of congenital diseases of the larynx

- **Clinical picture**: mild or sever stridor.
  weak or hoarseness of voice.
- **Diagnosis by**:
  Flexible nasolaryngoscopy at ENT clinic or
  DL under GA.
- **Treatment**: if mild symptoms: conservative
  if sever symptoms, stridor:
  Tracheostomy, DL and MLS.

Chronic pharyngolaryngitis.

- Hypertrophic and ulcerated epiglottis, arytenoids and all pharyngo-laryngeal mucosa.
- Narrowing of laryngeal inlet.
- True vocal cords can not be seen.

Benign laryngeal lesions

- Vocal cord polyp.
- Vocal cord cyst.
- Vocal cord nodules.

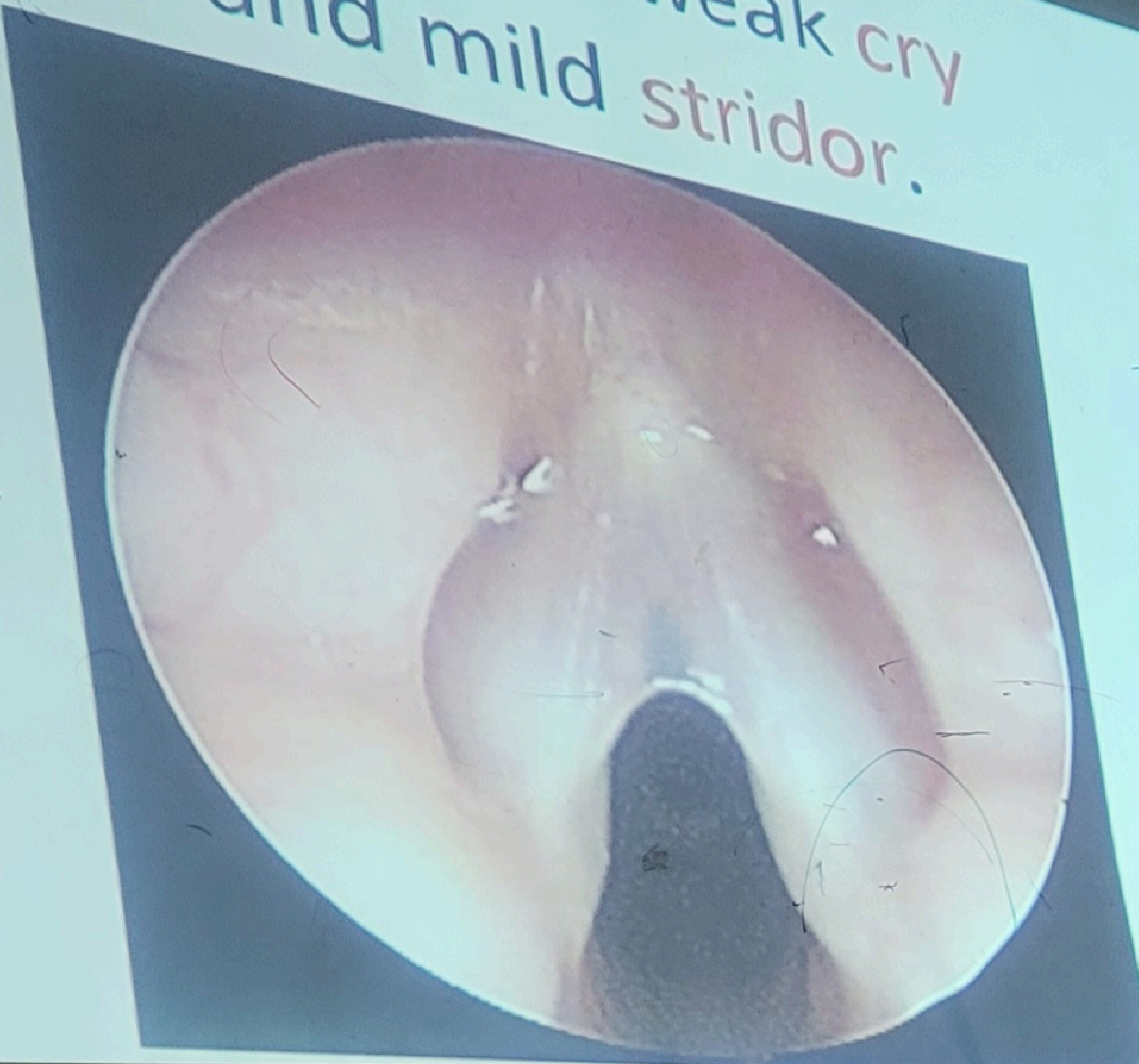
Treatment

- Small web: no treatment but avoid URTI.
- Large web:
- Tracheostomy in sever stridor.
- DL and MLS: excision of the web either by laser or conventional.

Congenital Web

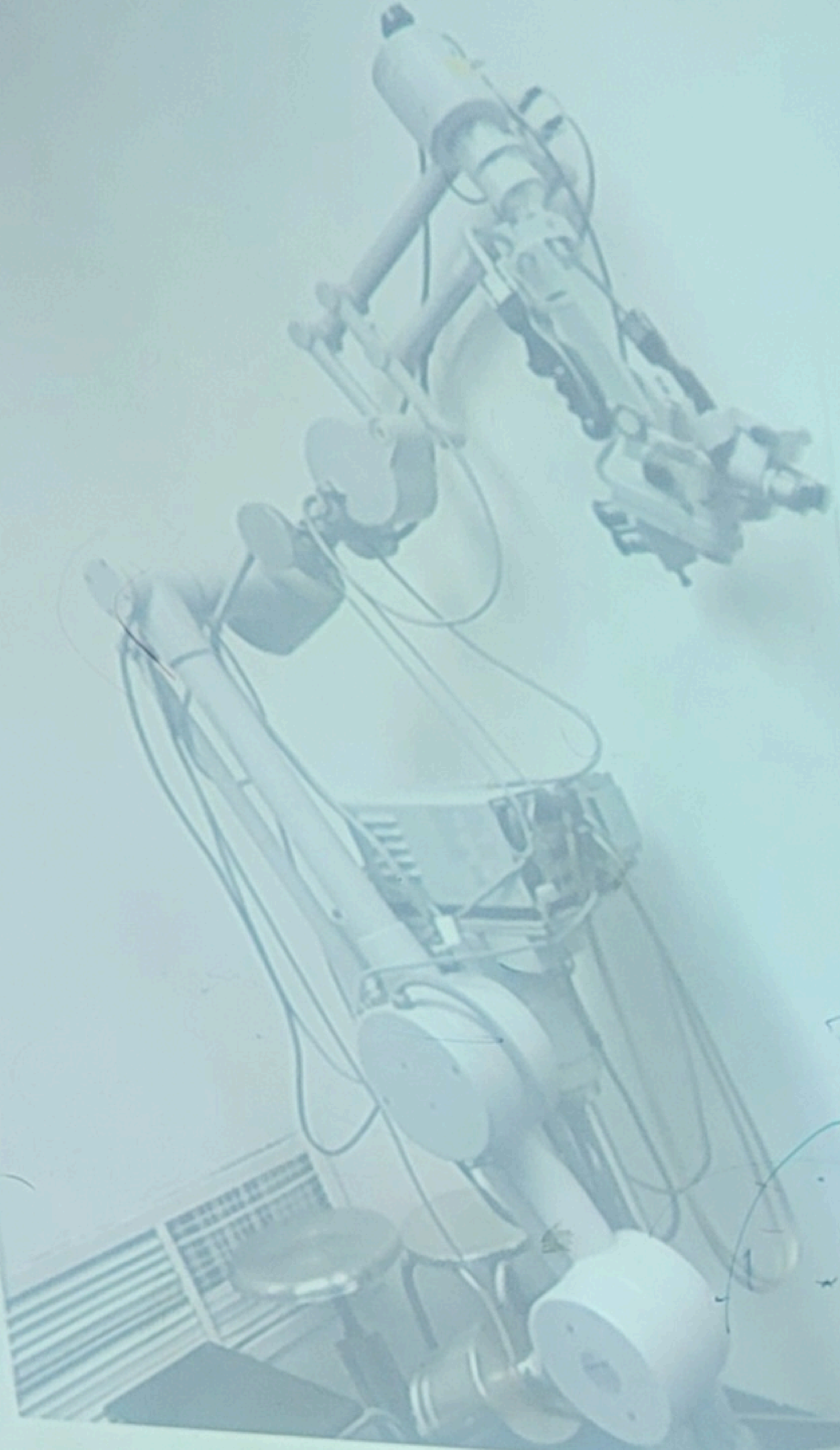
- Diagnosis : **flexible laryngoscopy**
  DL:
- Fibrous tissue at anterior part between both VC.

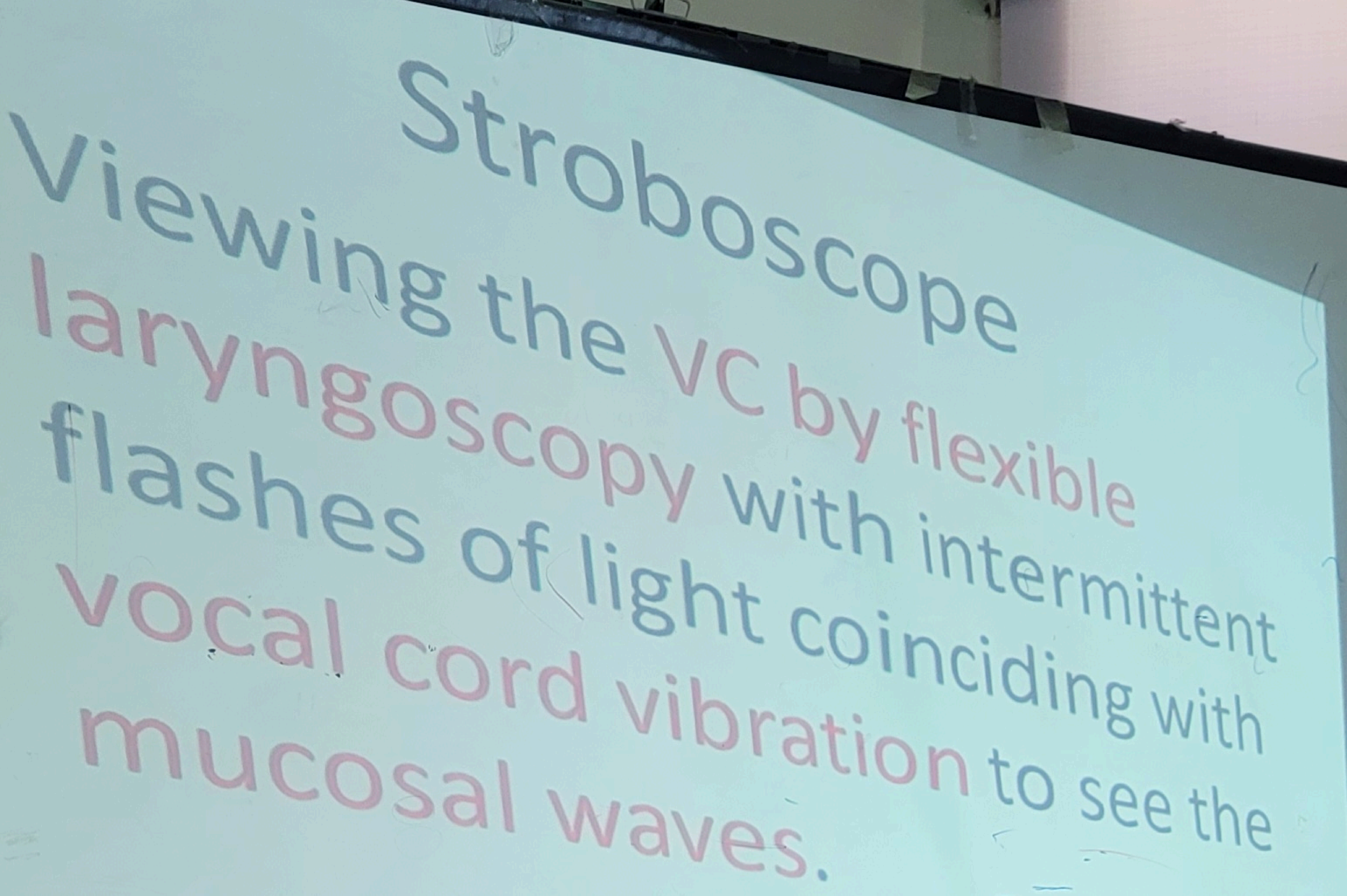
Anterior glottic web. weak cry hoarseness and mild stridor.



Microlaryngoscopy

- Viewing larynx through rigid wide tube (laryngoscope) with using a microscope to magnify the view.
- MLS: micro laryngeal surgery by micro laryngoscopy.





Stroboscope

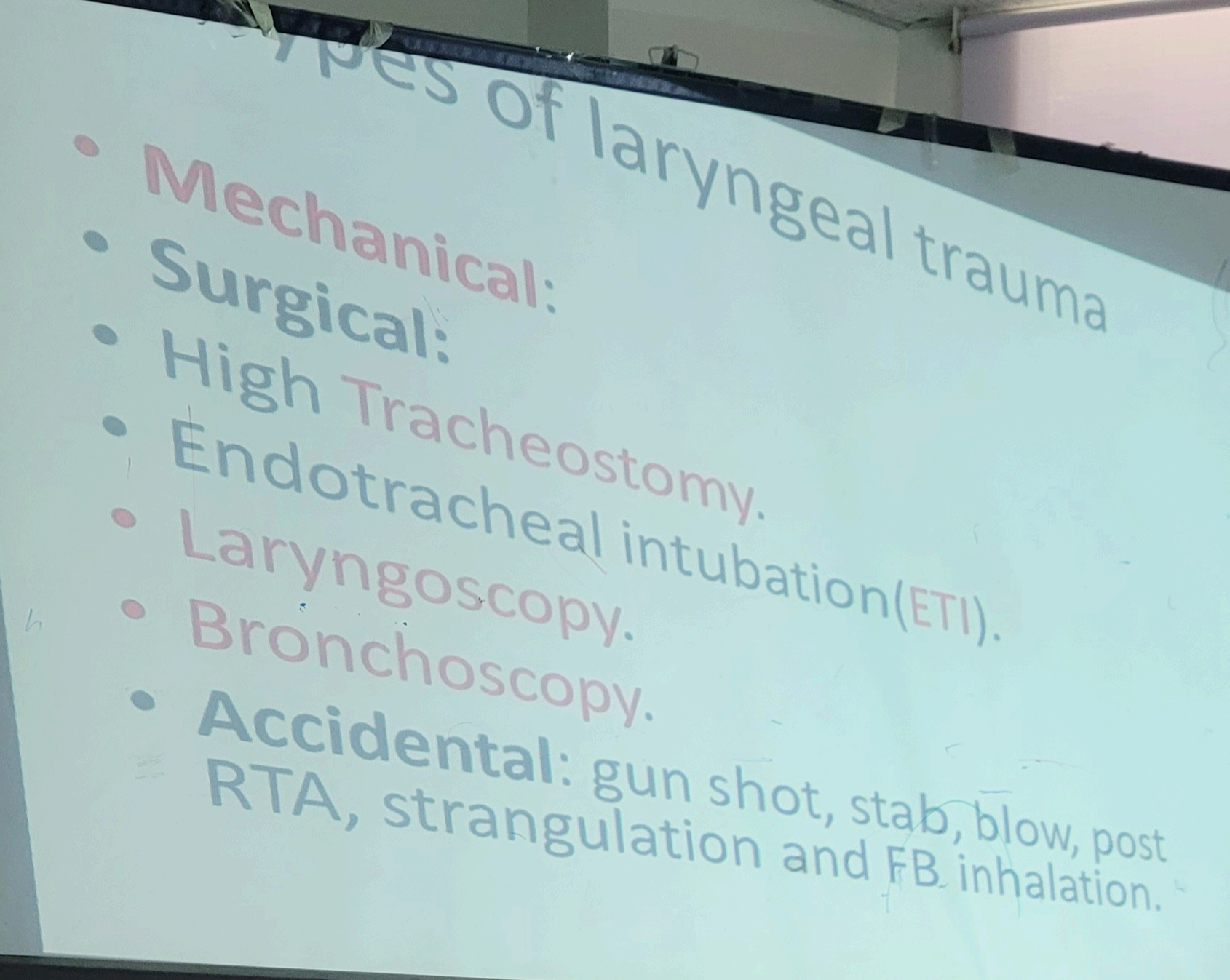
Viewing the VC by flexible laryngoscopy with intermittent flashes of light coinciding with vocal cord vibration to see the mucosal waves.

Laryngeal trauma

Laryngeal trauma

It may involve:

- Soft tissues.
- Cartilaginous skeleton.
- Cricotracheal separation: fatal, except if urgently managed.



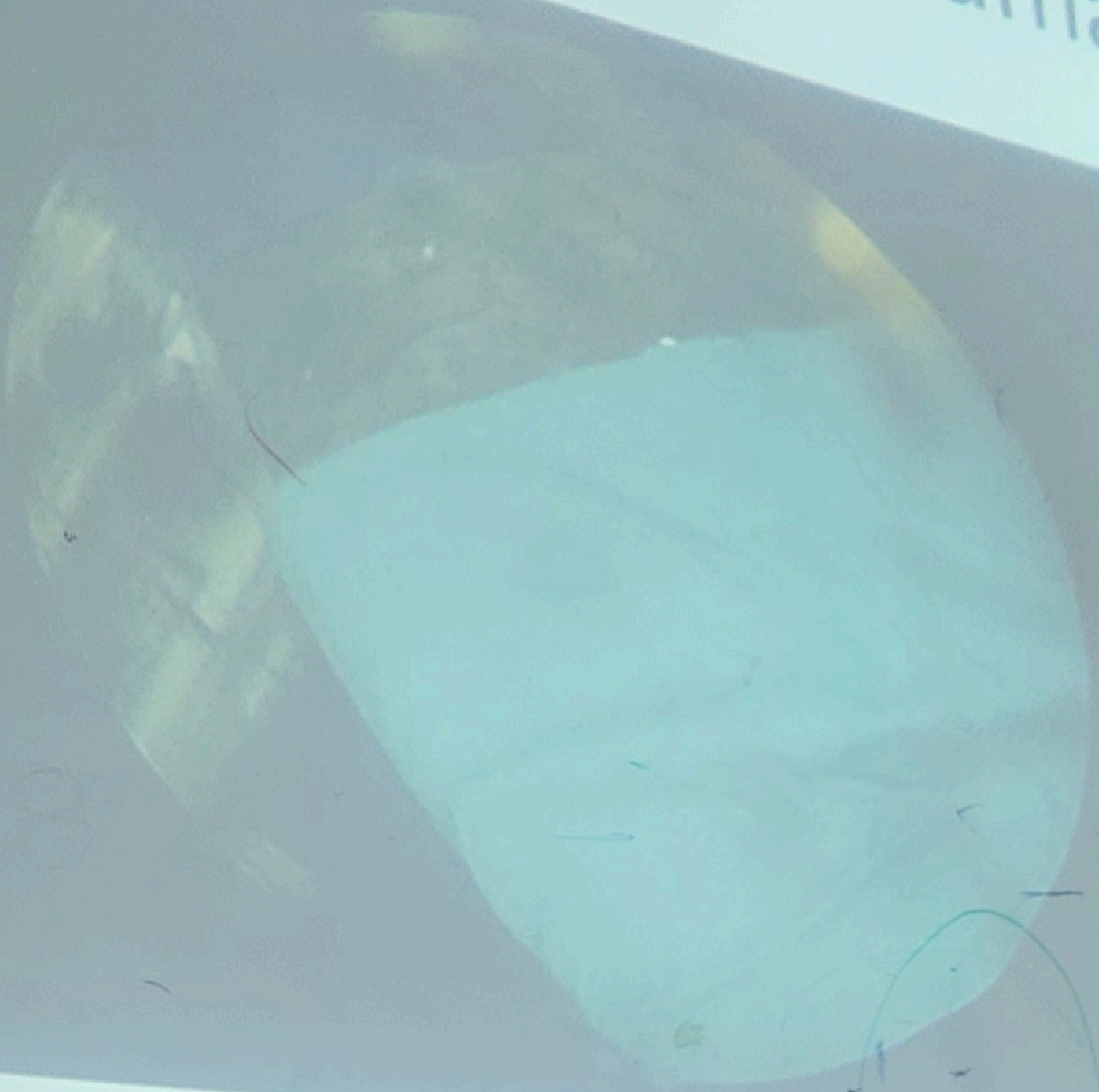
ypes of laryngeal trauma

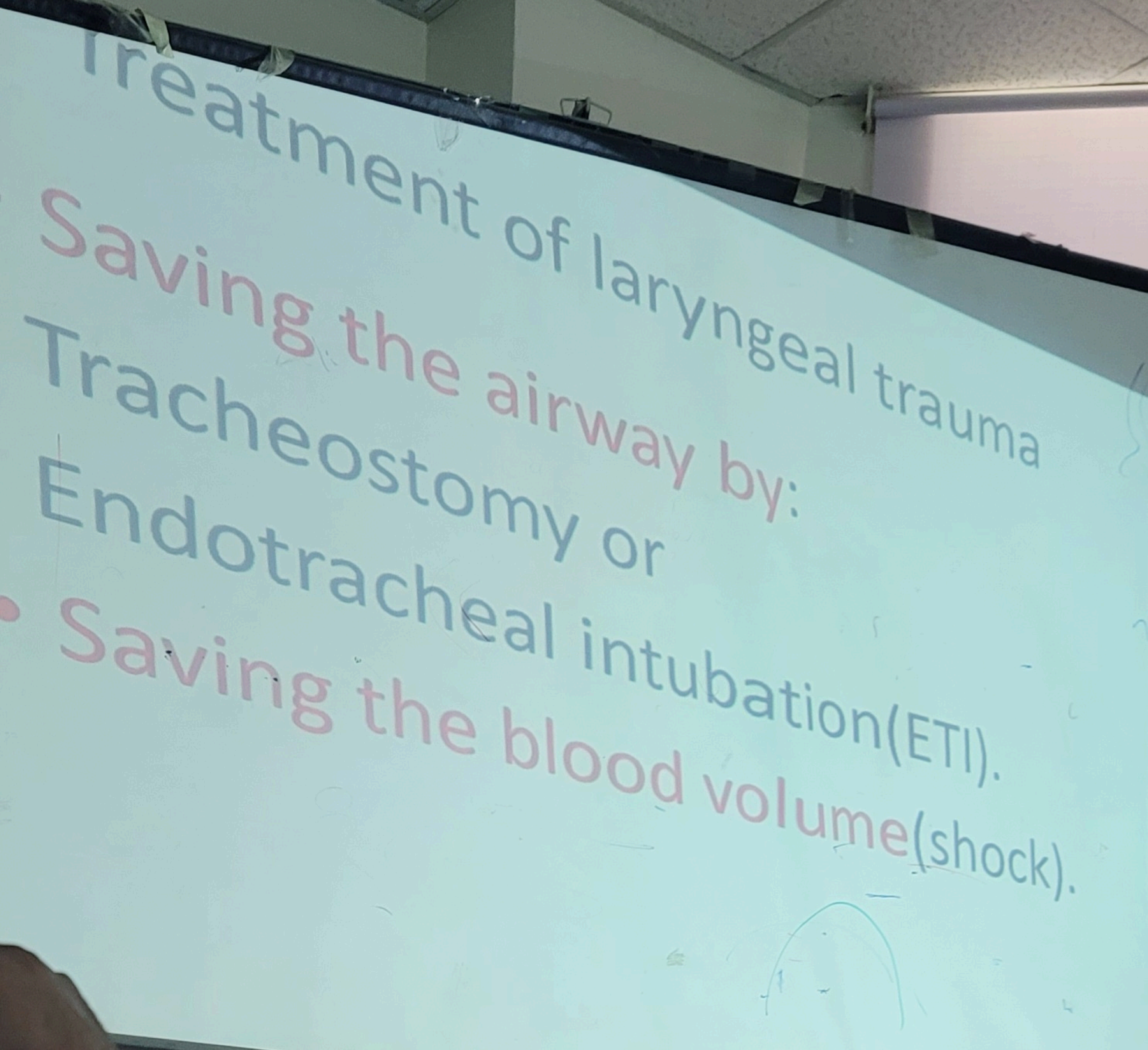
- **Mechanical**:
- **Surgical:**
- High Tracheostomy.
- Endotracheal intubation(ETI).
- Laryngoscopy.
- Bronchoscopy.
- **Accidental**: gun shot, stab, blow, post RTA, strangulation and FB inhalation.

Symptoms of laryngeal trauma

- History of trauma.
- Stridor.
- Hoarseness.
- Pain.
- Dysphagia due to the pain
- Hemorrhage.
- Neck swelling(edema, hematoma, emphysema).
- Shock ,neurogenic (pain) hypovolemic(hemorrhage).

Sever Laryngeal trauma

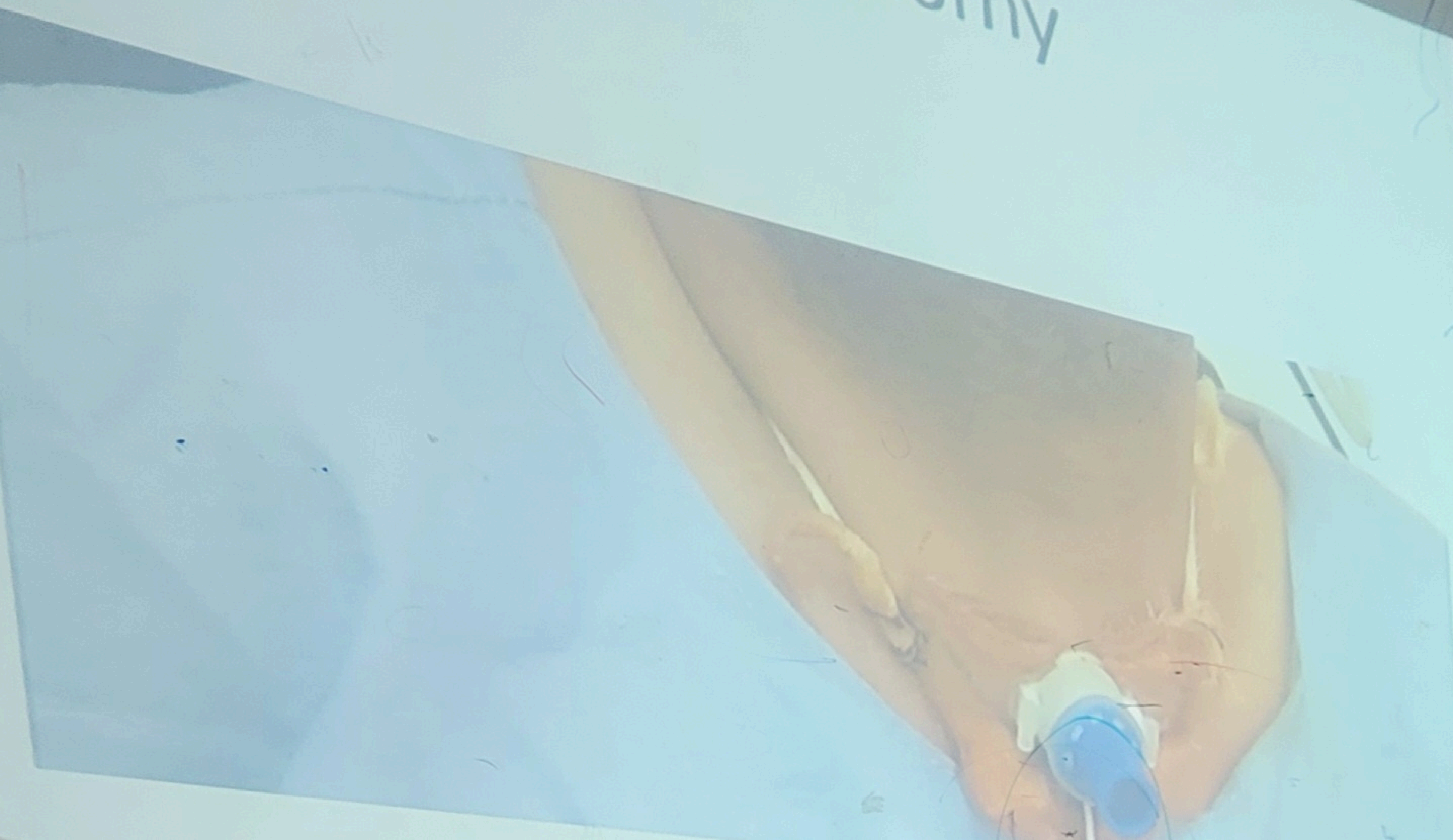




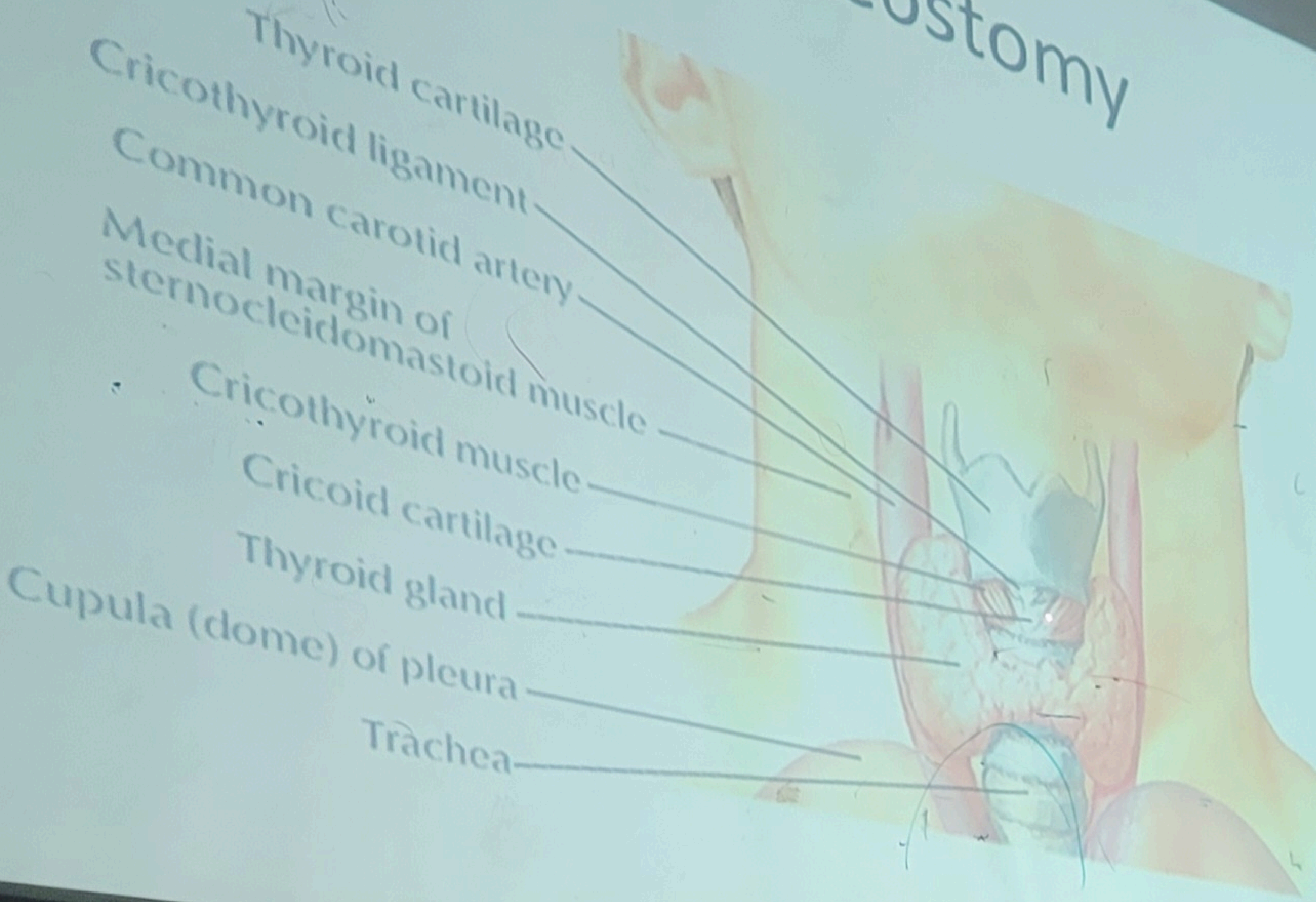
Treatment of laryngeal trauma

- Saving the airway by:
  Tracheostomy or
  Endotracheal intubation(ETI).
- Saving the blood volume(shock).

Tracheostomy

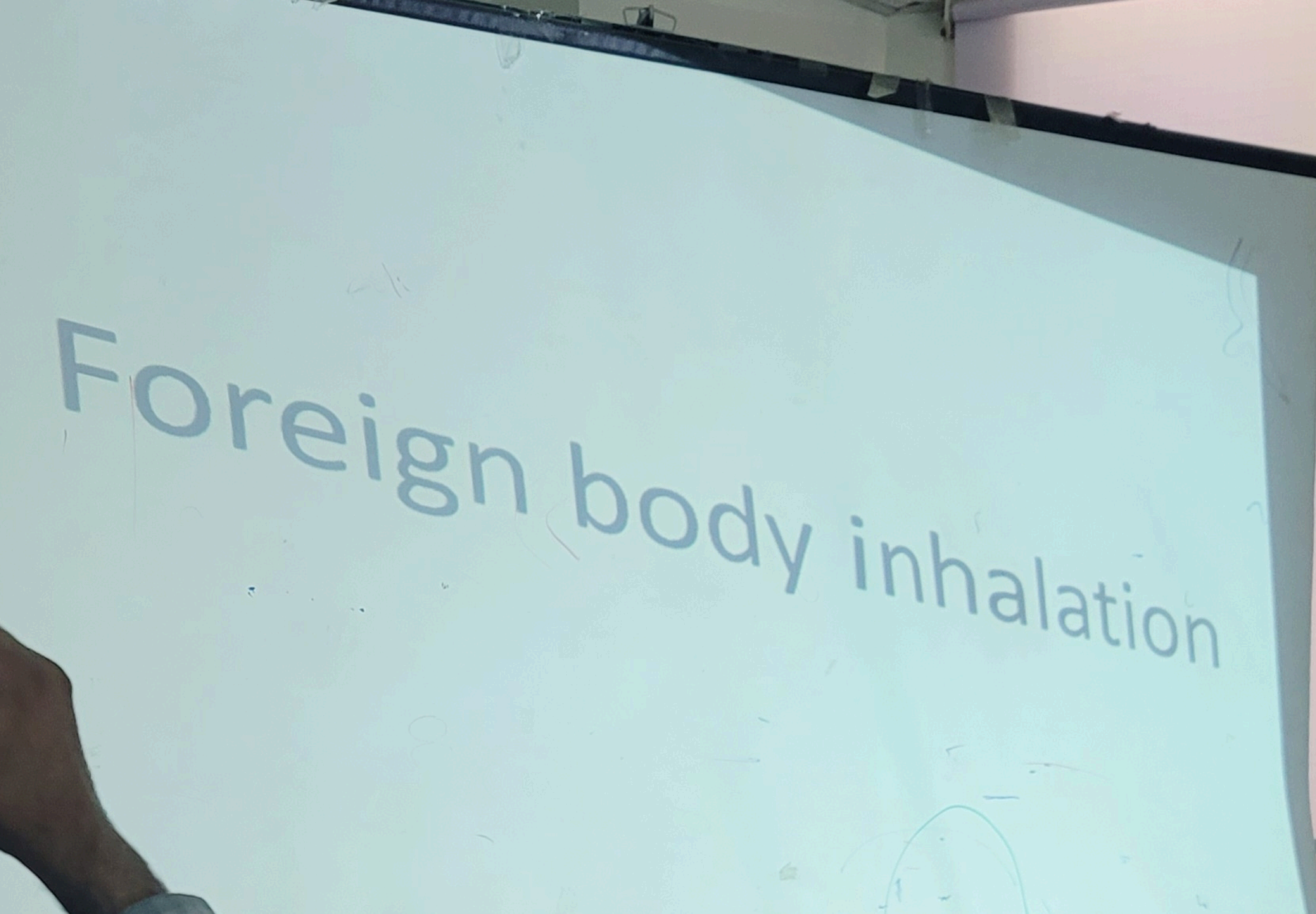


Site of tracheostomy

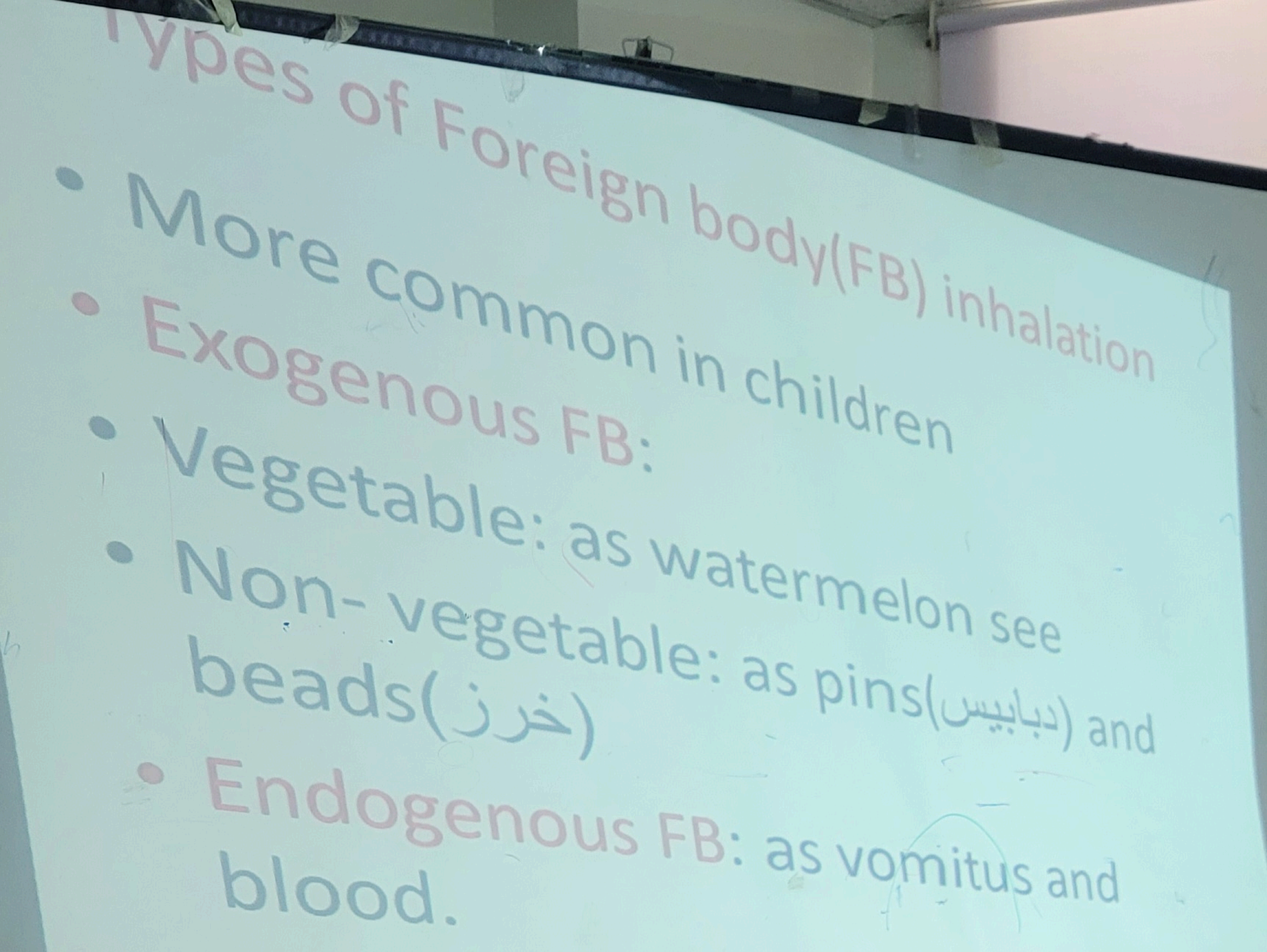

Thyroid cartilage
Cricothyroid ligament
Common carotid artery
Medial margin of sternocleidomastoid muscle
Cricothyroid muscle
Cricoid cartilage
Thyroid gland
Cupula (dome) of pleura
Trachea

Treatment of laryngeal trauma

- Systemic AB to prevent infection
- Steroids to decrease the edema.
- Management of the pathology:
  - Ligation of bleeding vessels.
  - Reduction and fixation of fractured cartilages.

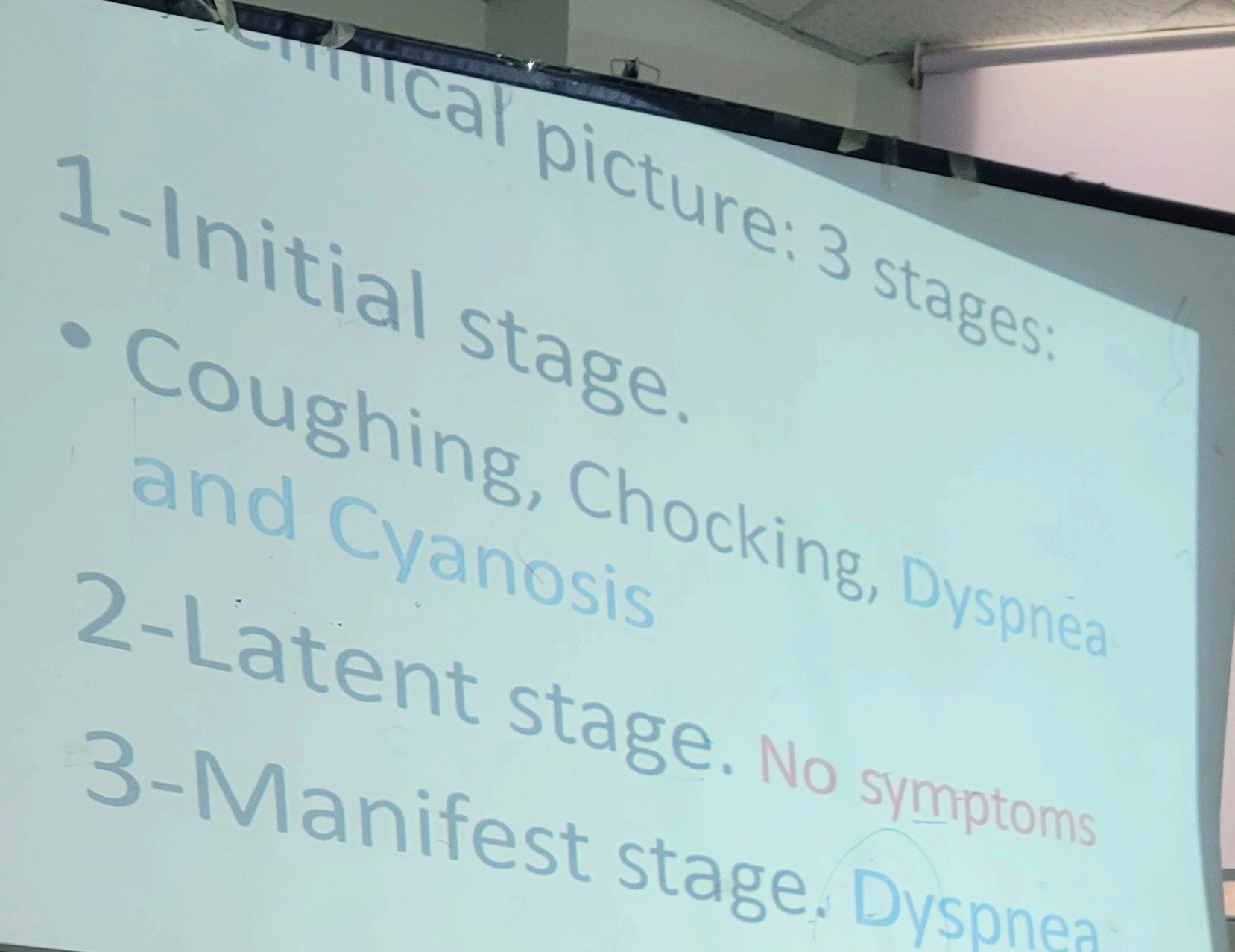


Foreign body inhalation



Types of Foreign body(FB) inhalation

- More common in children
- Exogenous FB:
- Vegetable: as watermelon see
- Non- vegetable: as pins(دبابيس) and beads(خرز)
- Endogenous FB: as vomitus and blood.



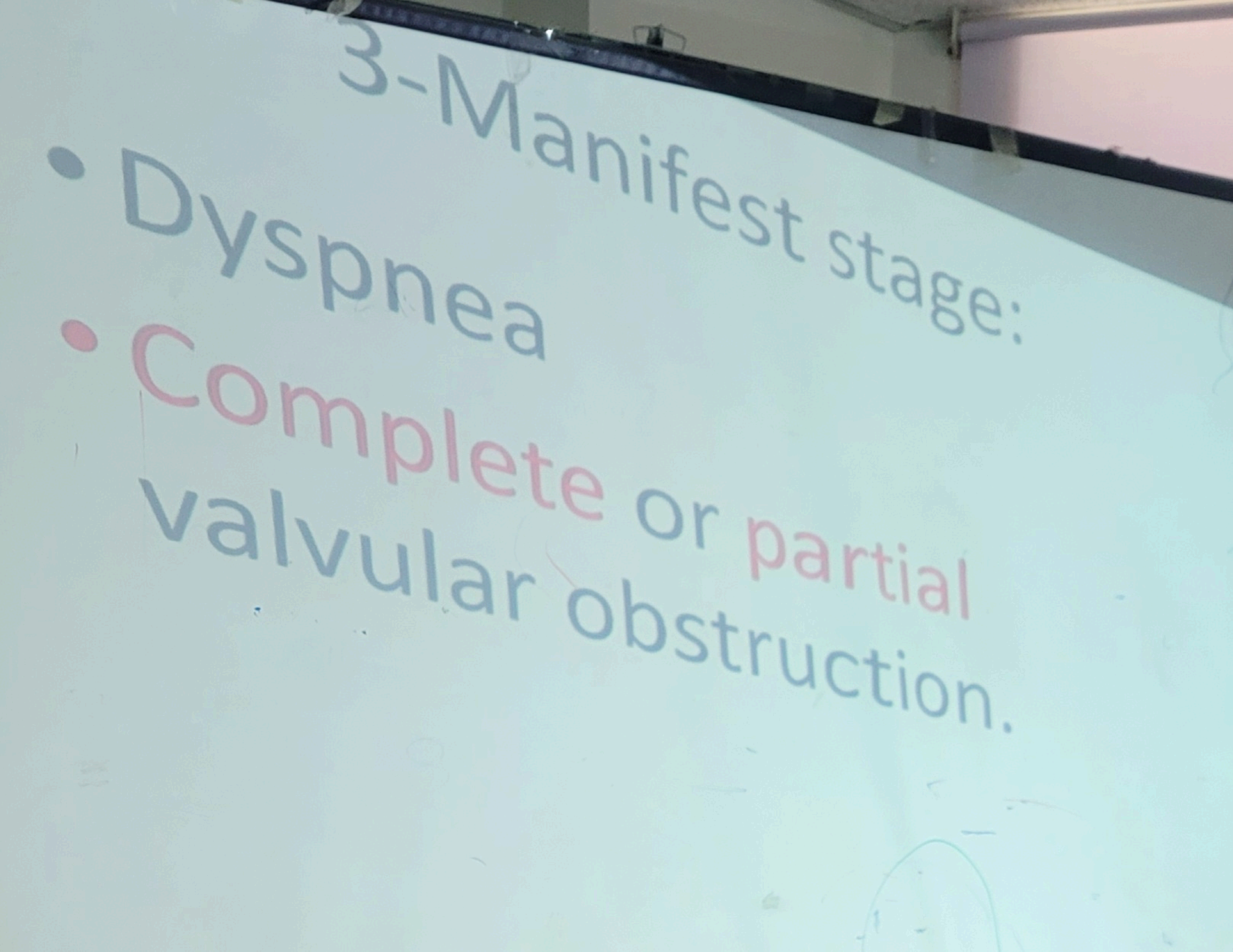
ical picture: 3 stages:

1-Initial stage.

- Coughing, Chocking, Dyspnea and Cyanosis

2-Latent stage. No symptoms

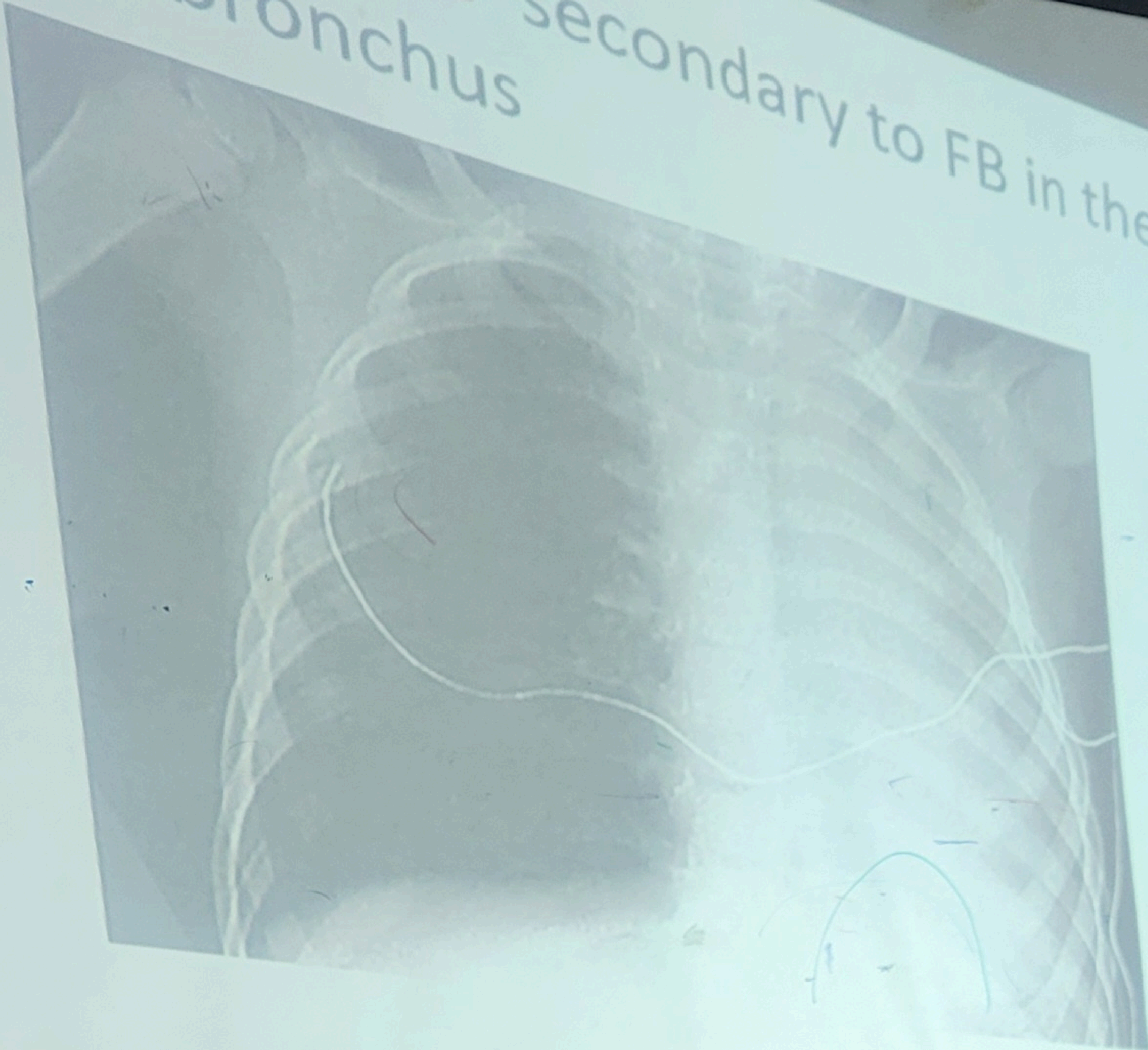
3-Manifest stage. Dyspnea



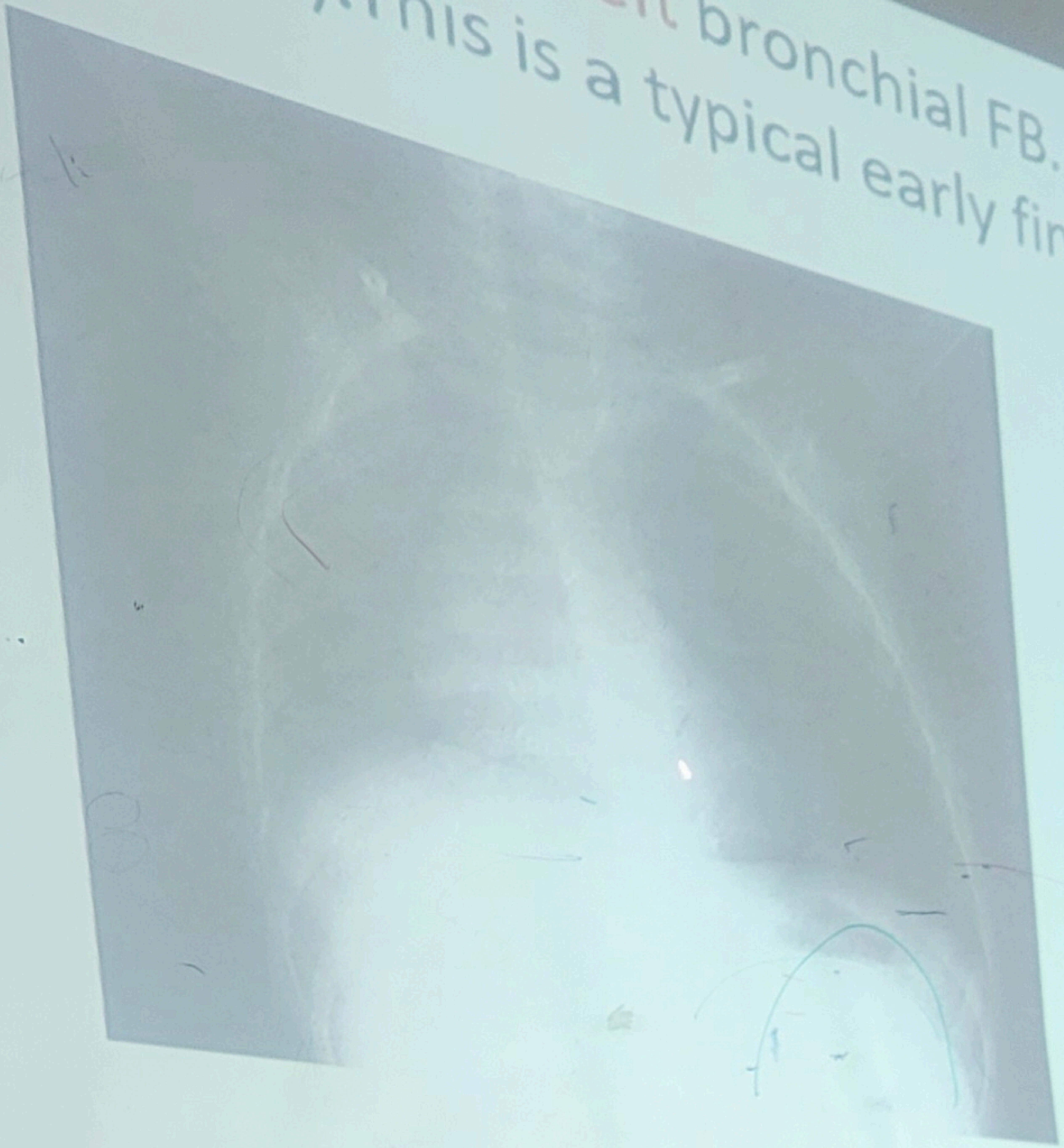
3-Manifest stage:

- Dyspnea
- Complete or partial valvular obstruction.

bar collapse secondary to FB in the left main bronchus



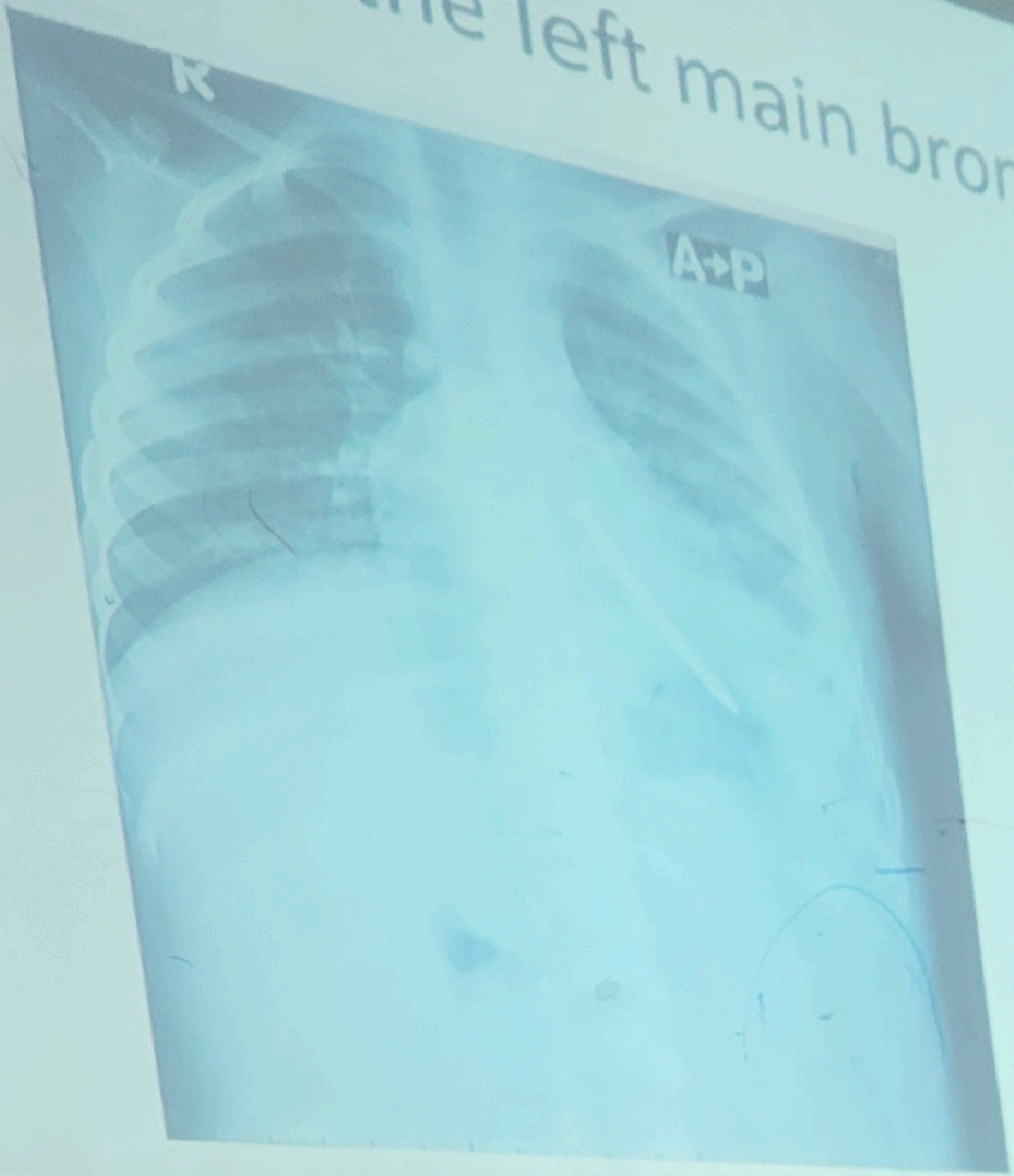
on side of left bronchial FB. (peanut fragment).This is a typical early finding



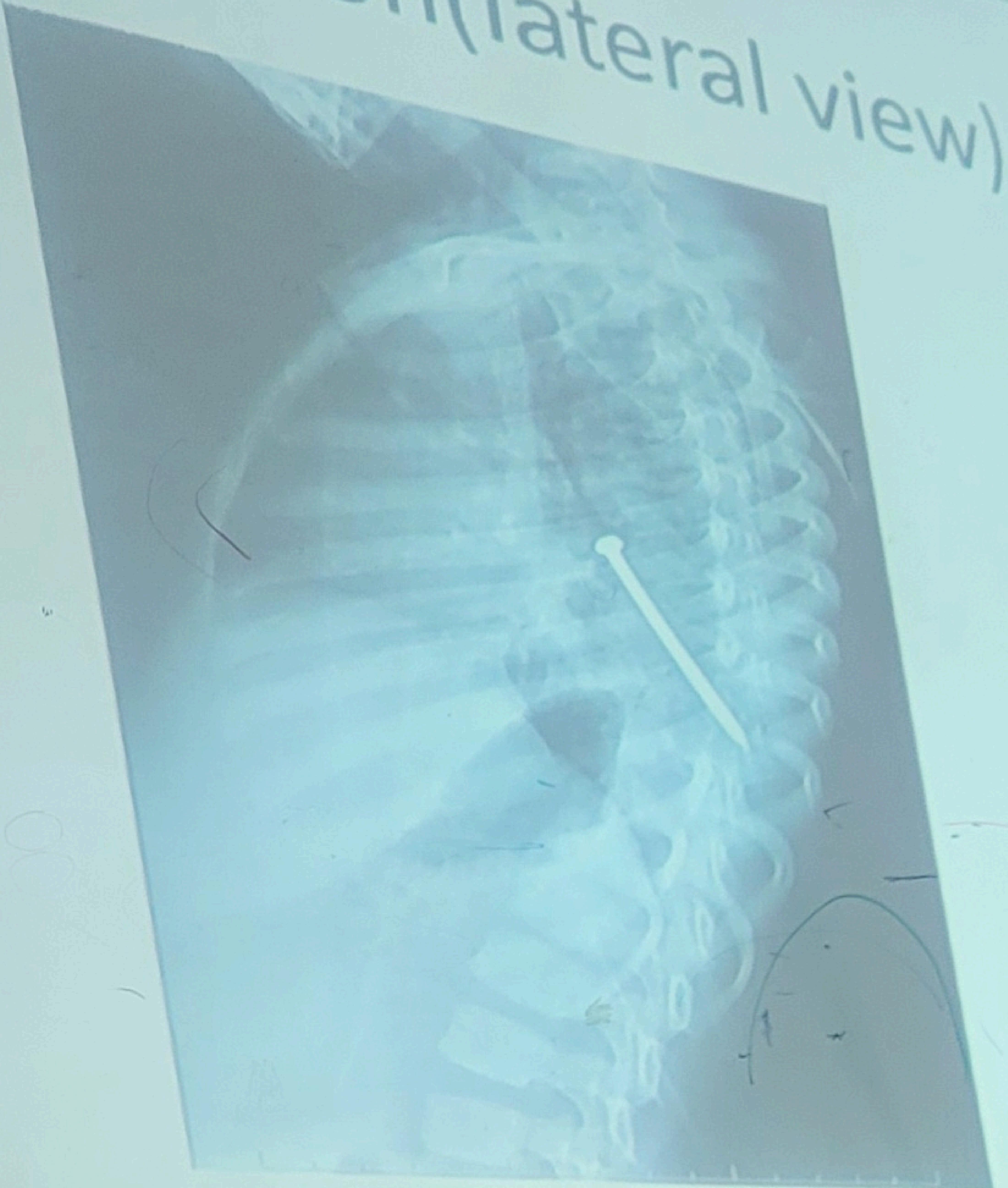
Investigations

- Chest x-ray may shows:
  - Radio-opaque FB.
  - Collapse
  - Emphysema
- CT scan
- Bronchoscopy is diagnostic to see the FB

B inhalation in the left main bronchus



FB inhalation(lateral view)



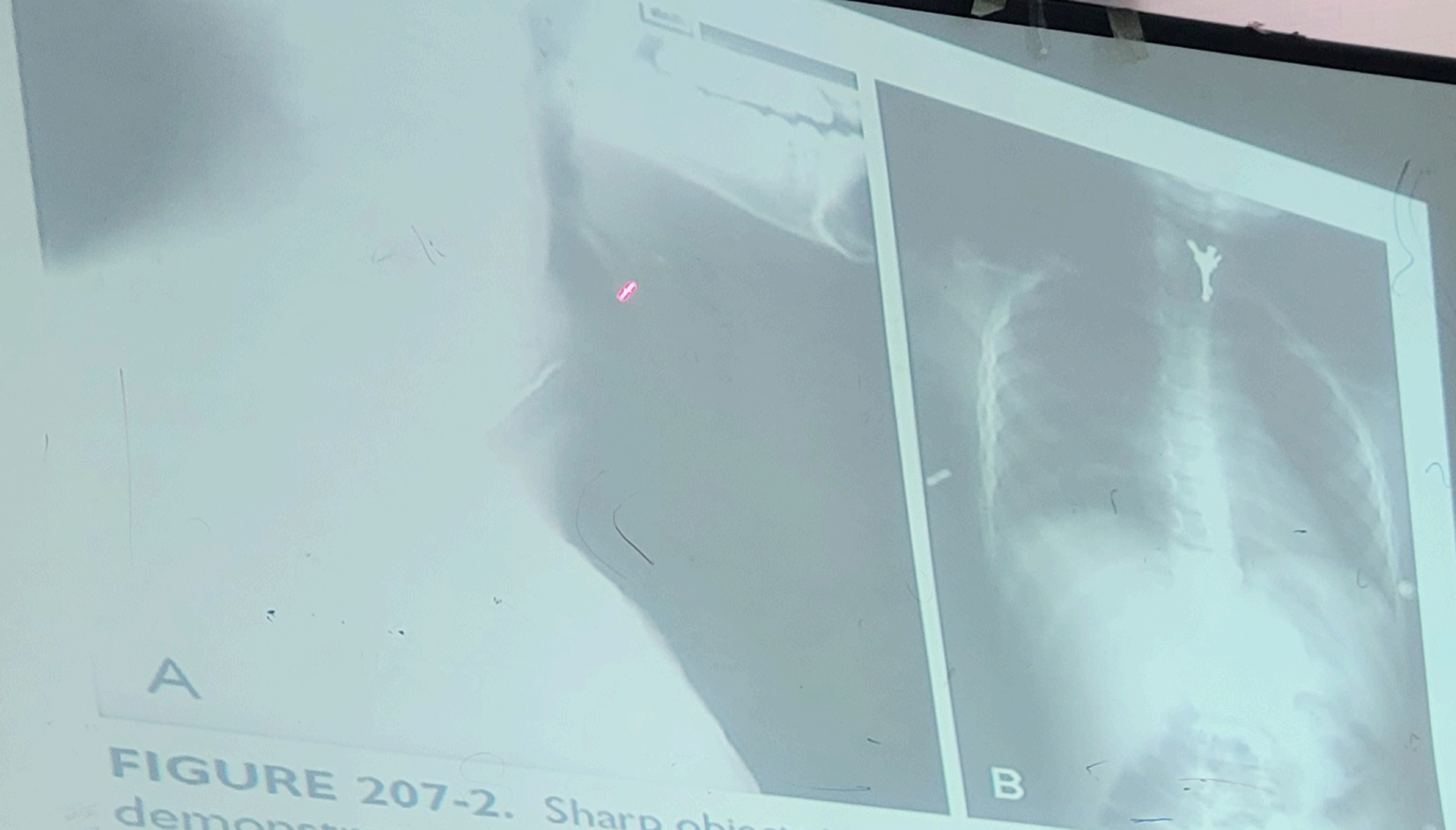
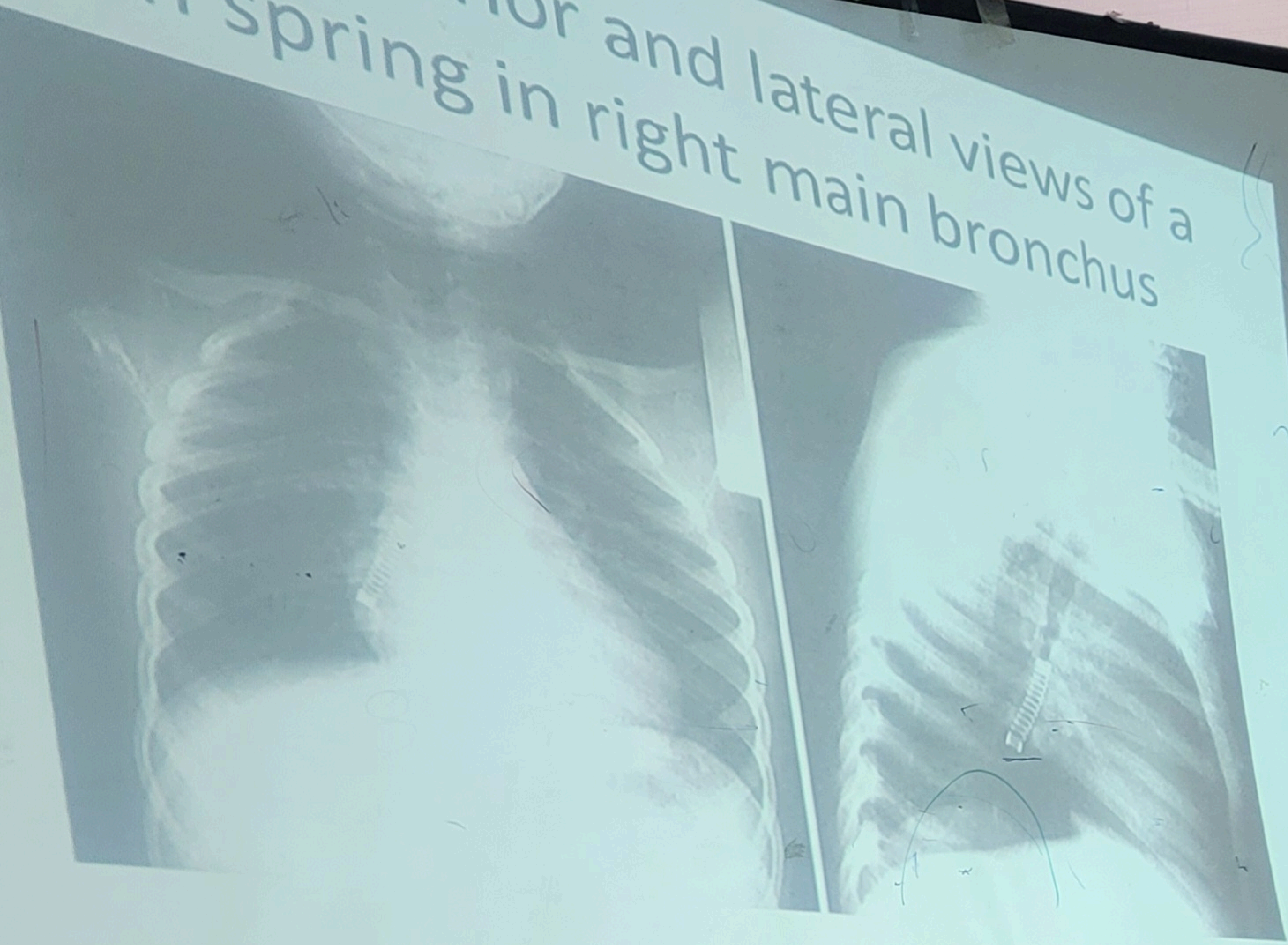


FIGURE 207-2. Sharp objects in aerodigestive tract. **A,** Lateral radiograph demonstrates a sharp needle lodged in the trachea. **B,** Posteroanterior radiograph shows a toy Eiffel tower lodged in the airway. These sharp, metallic objects pose therapeutic challenges because they can puncture through the trachea or esophagus or can induce significant mucosal injury while being removed.

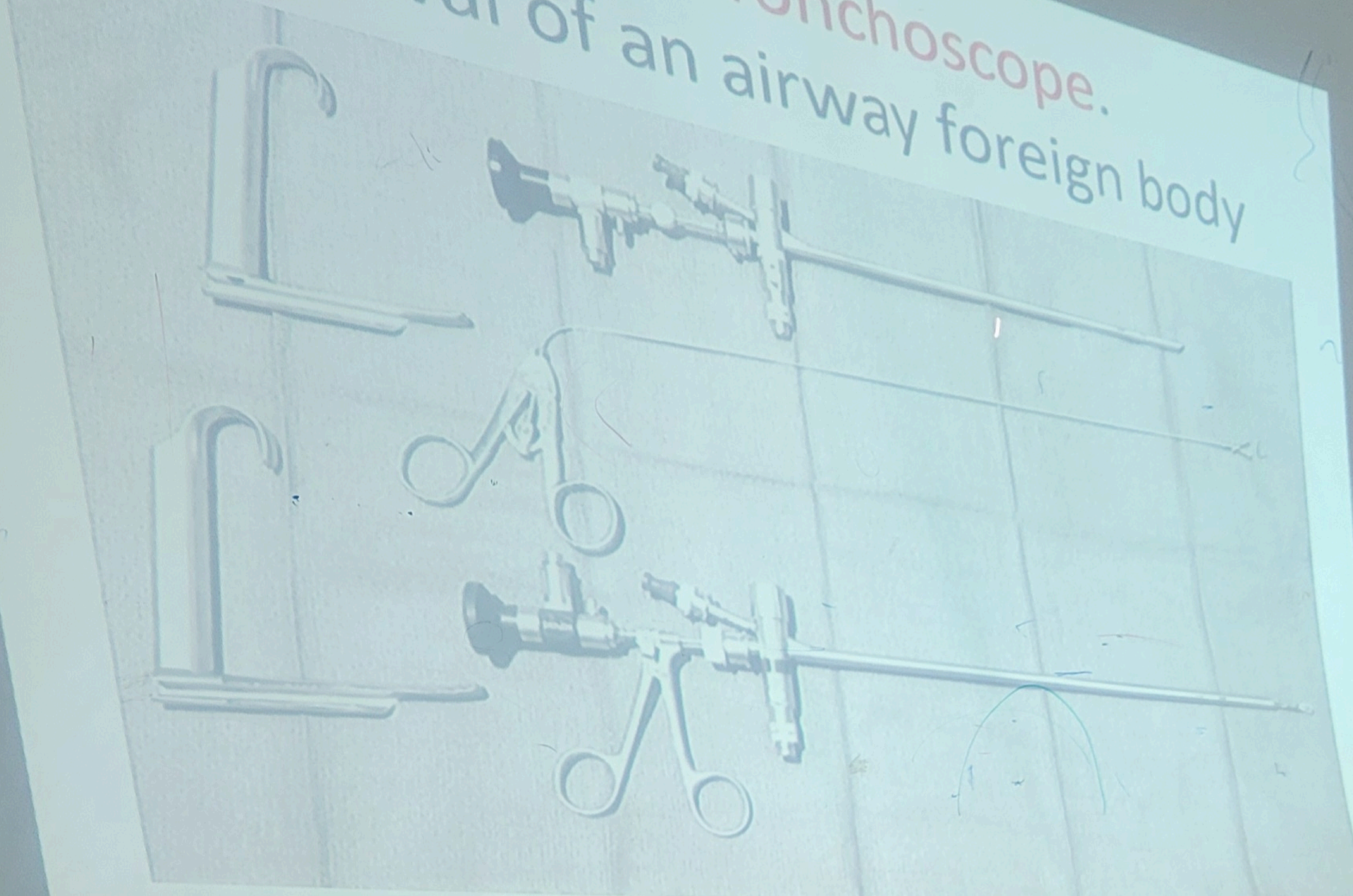
oanterior and lateral views of a pen spring in right main bronchus



Treatment of FB inhalation

Removal of FB by bronchoscopy under special technique of anesthesia.

ents and Bronchoscope. for removal of an airway foreign body



Heimlich maneuver

- Sudden compression of the upper abdomen and xiphisternum is done in the initial stage of FB inhalation to extrude it.

reign body ingestion
(in the esophagus)

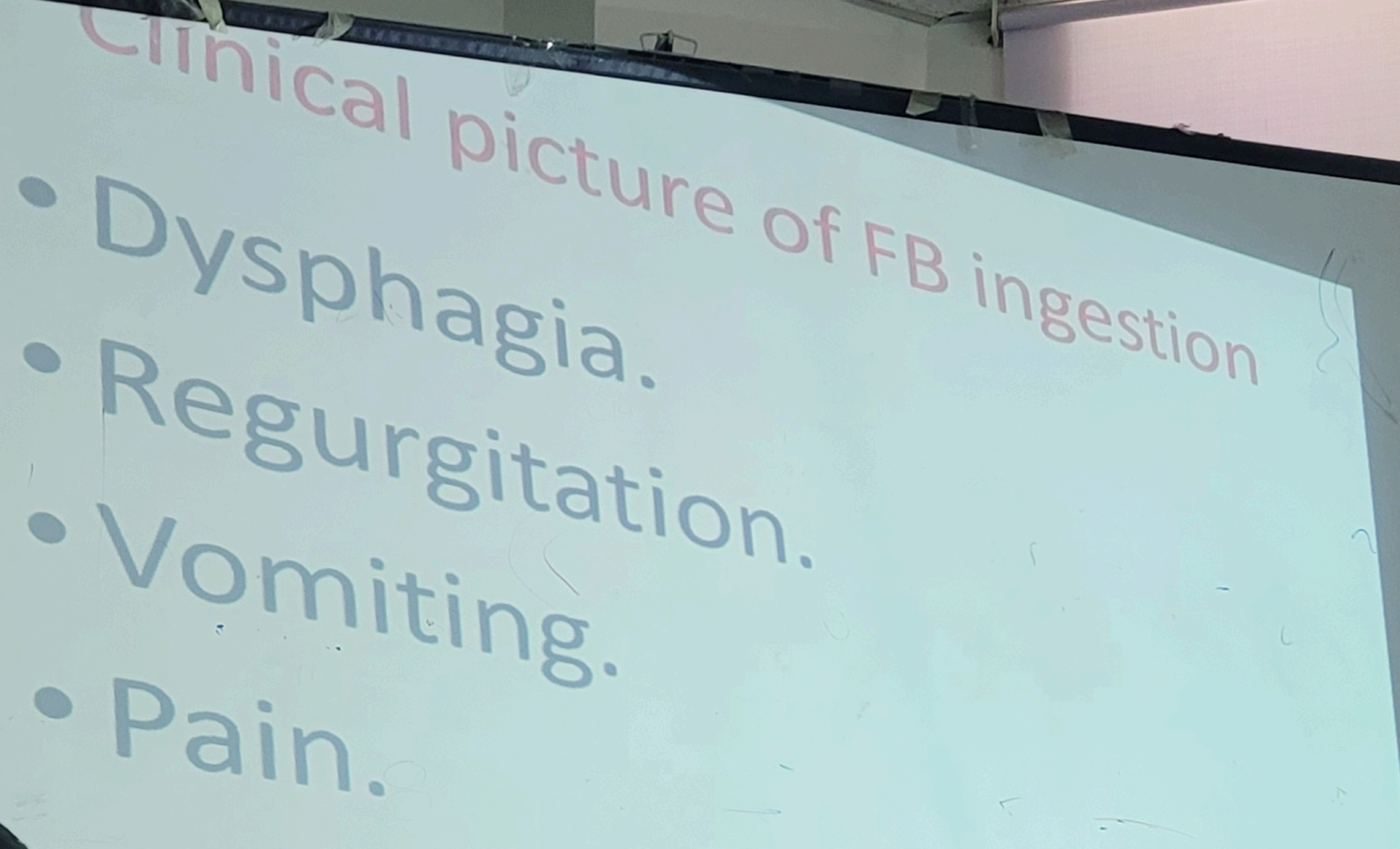
Types of F.B. and types of patients:

- Coins in children.
- Fish or meat bones in adults.
- Pins in mentally retarded pts.
- Denture in old ages.

oreign body ingestion (in the esophagus)

Types of F.B. and types of patients:

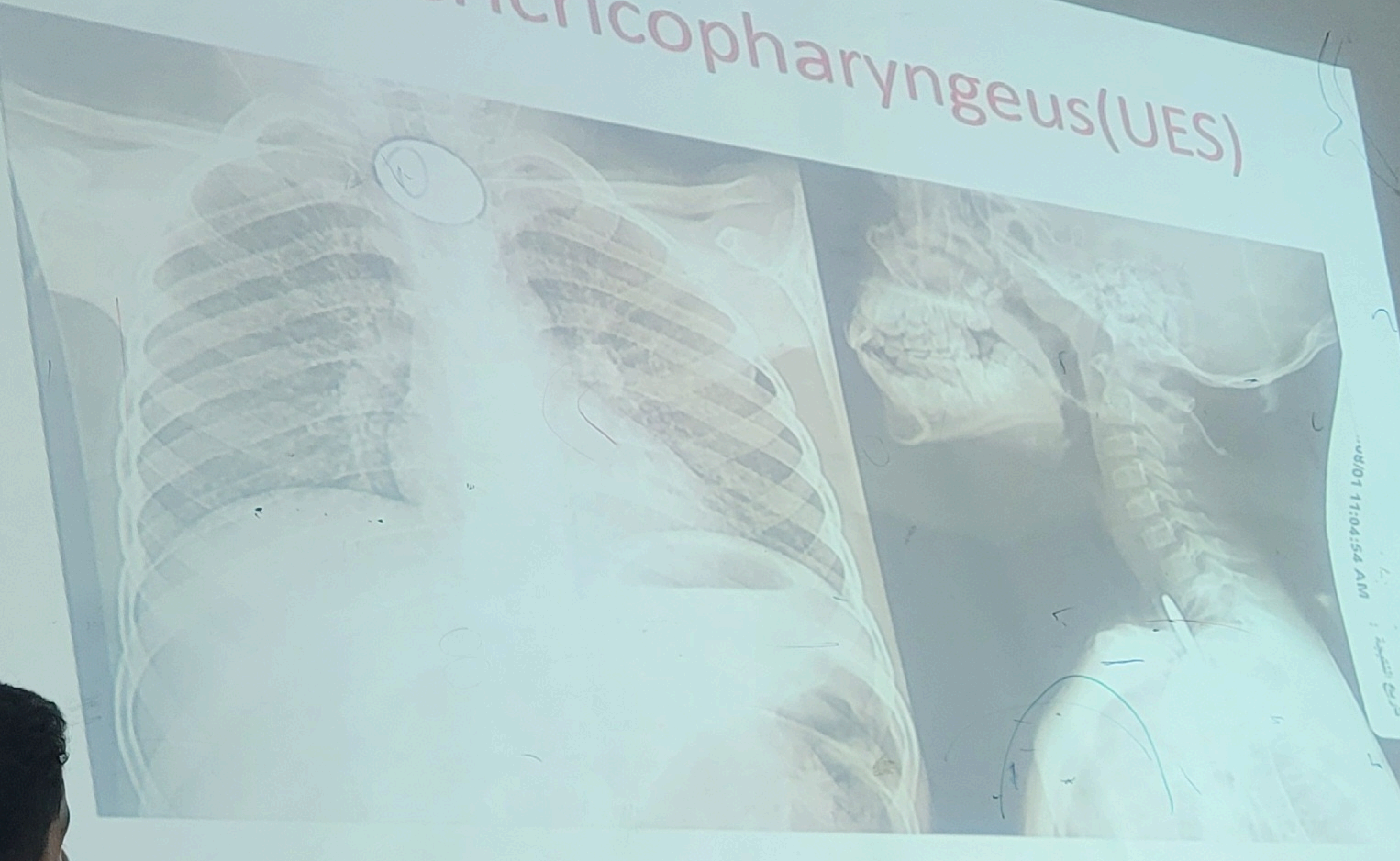
- Coins in children.
- Fish or meat bones in adults.
- Pins in mentally retarded pts.
- Denture in old ages.



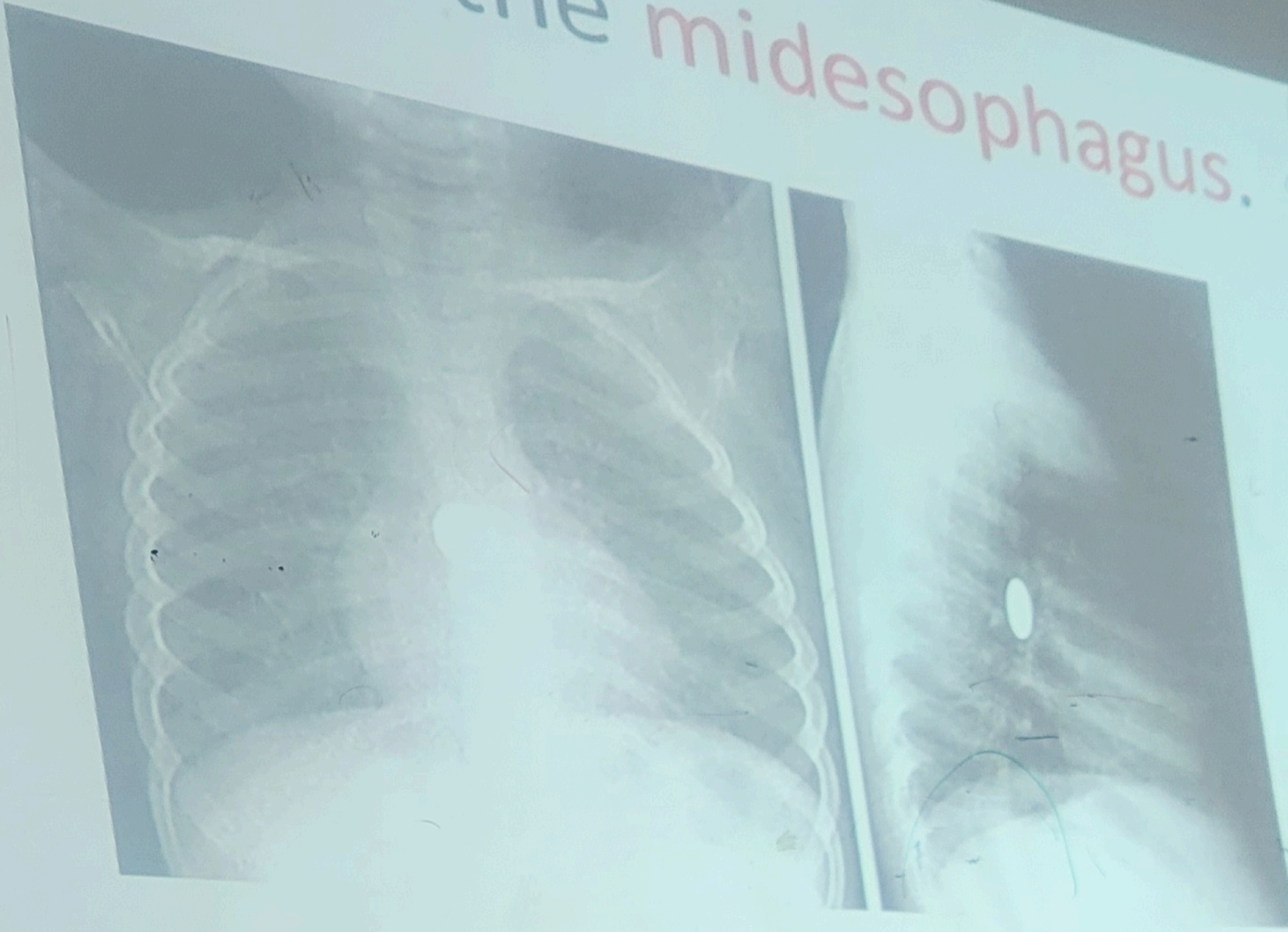
Clinical picture of FB ingestion

- Dysphagia.
- Regurgitation.
- Vomiting.
- Pain.

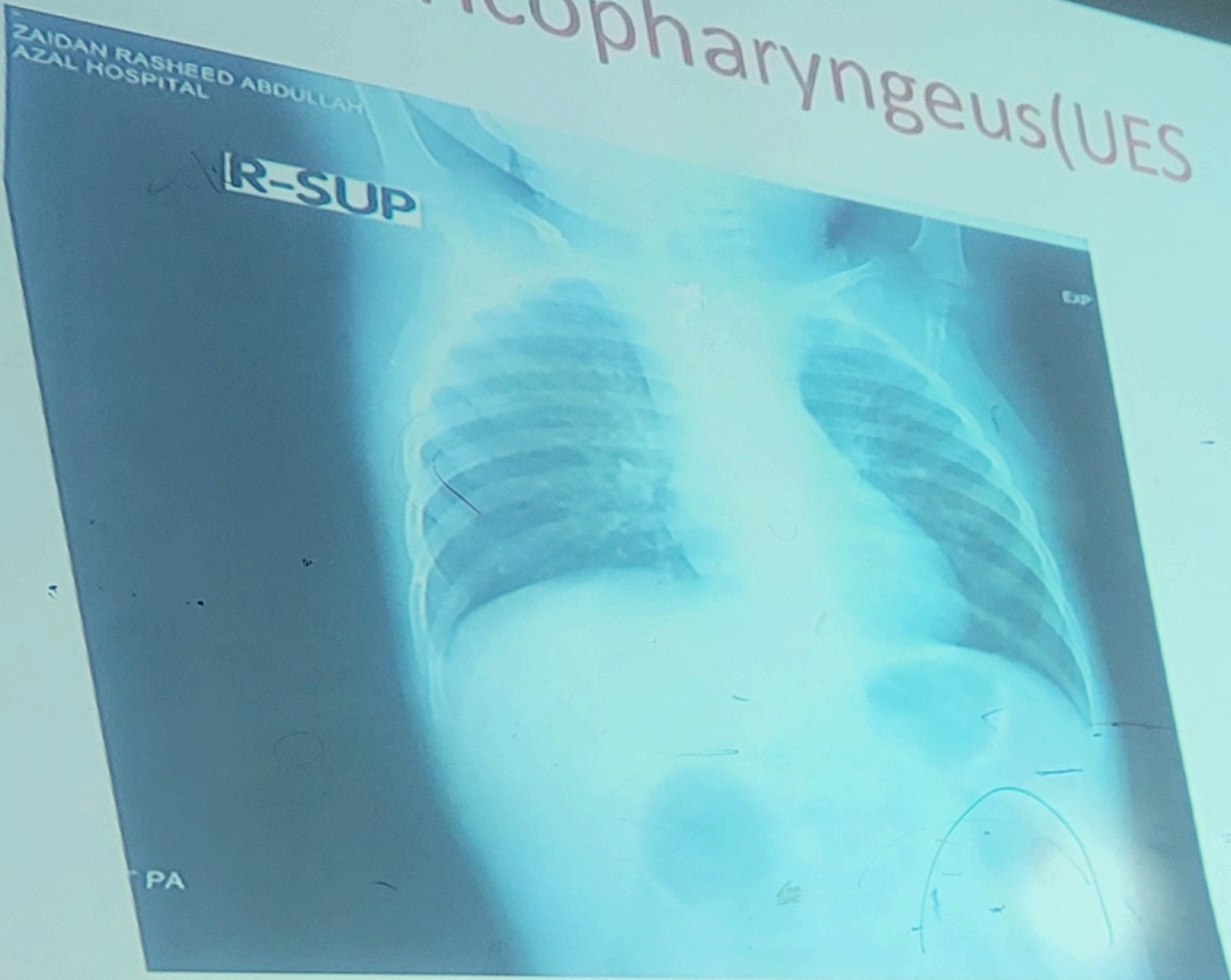
Below cricricopharyngeus(UES)

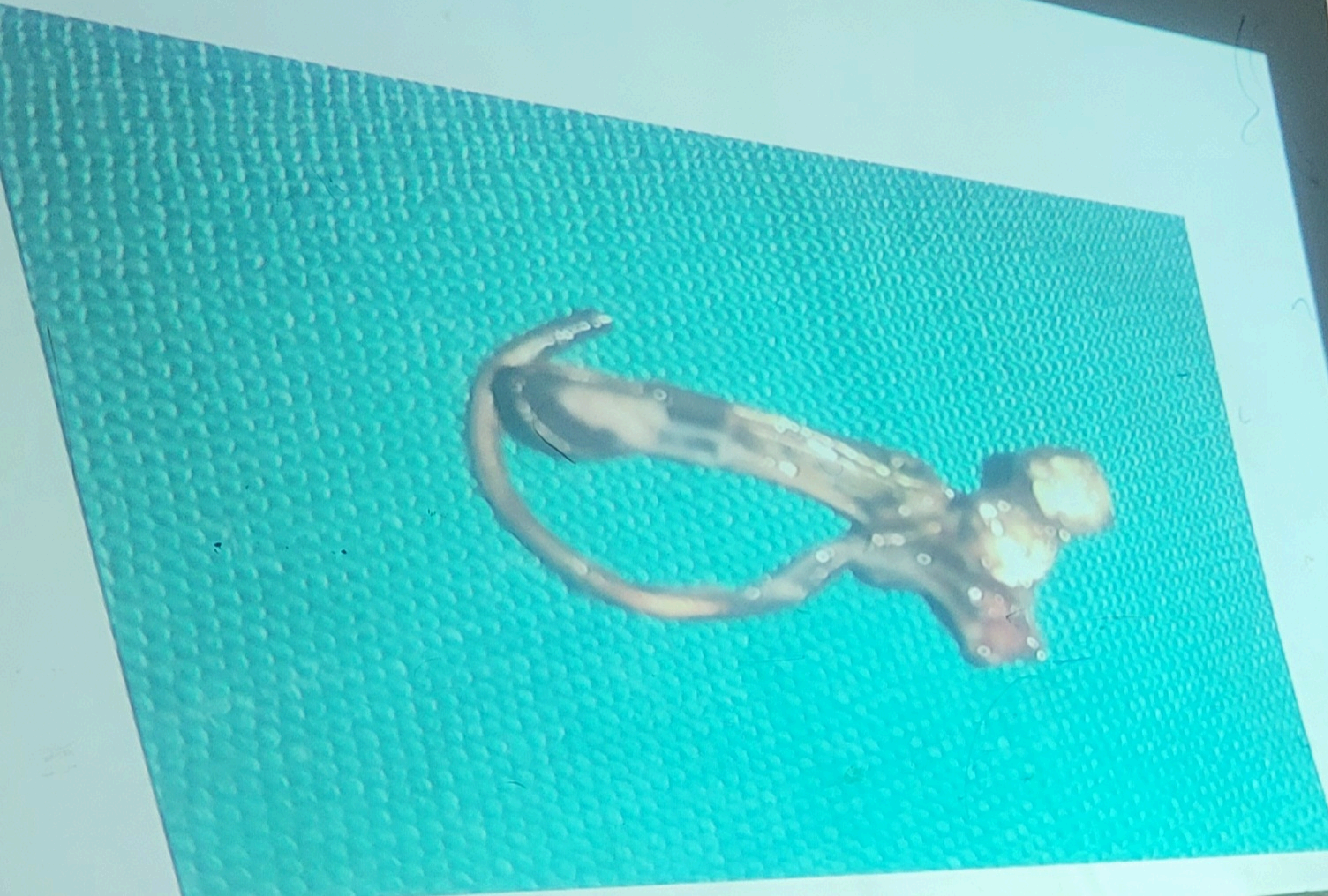

08/01 11:04:54 AM

a coin in the midesophagus.



Below cricricopharyngeus(UES


ZAIDAN RASHEED ABDULLAH
AZAL HOSPITAL
R-SUP
EXP
PA



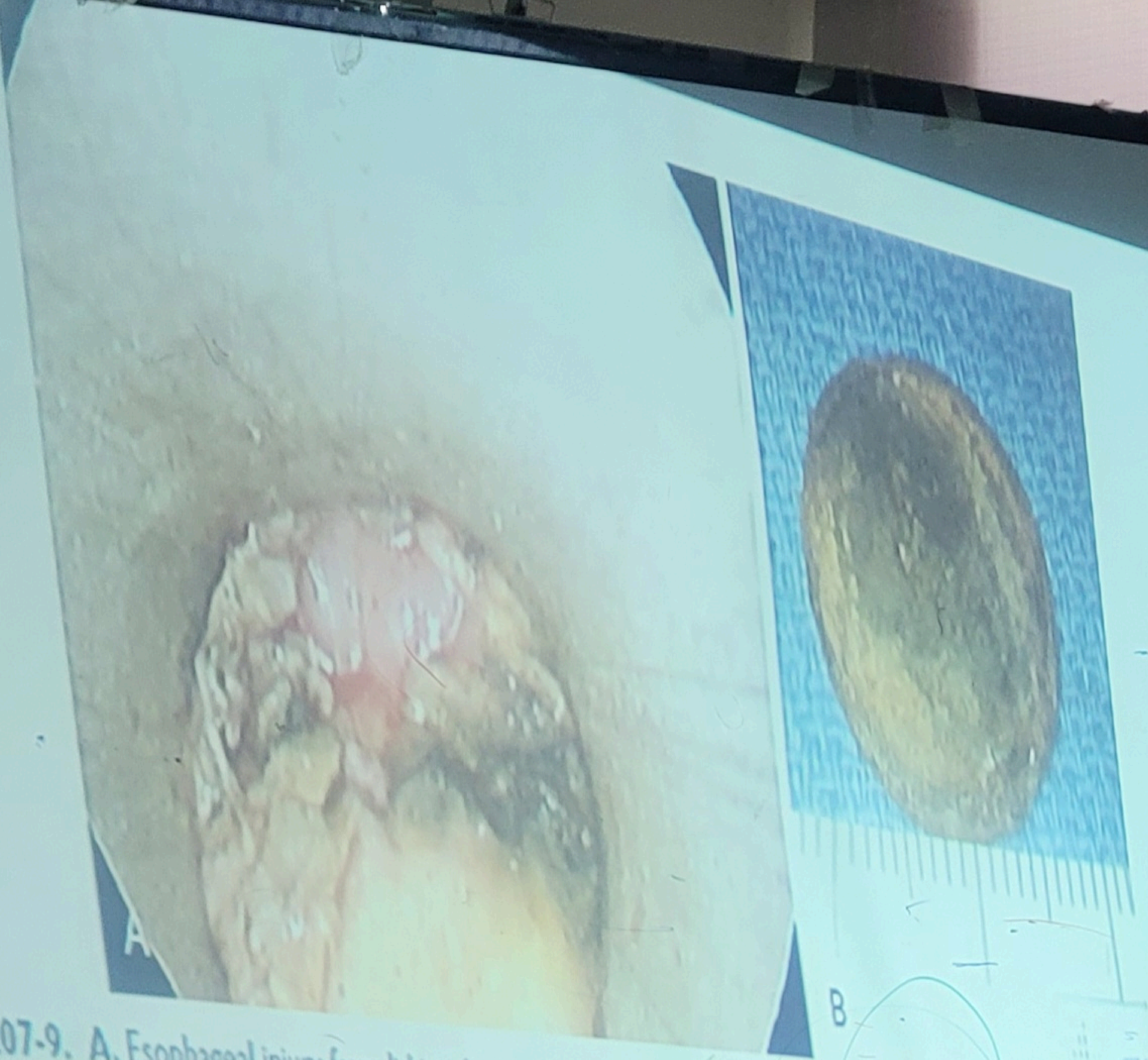
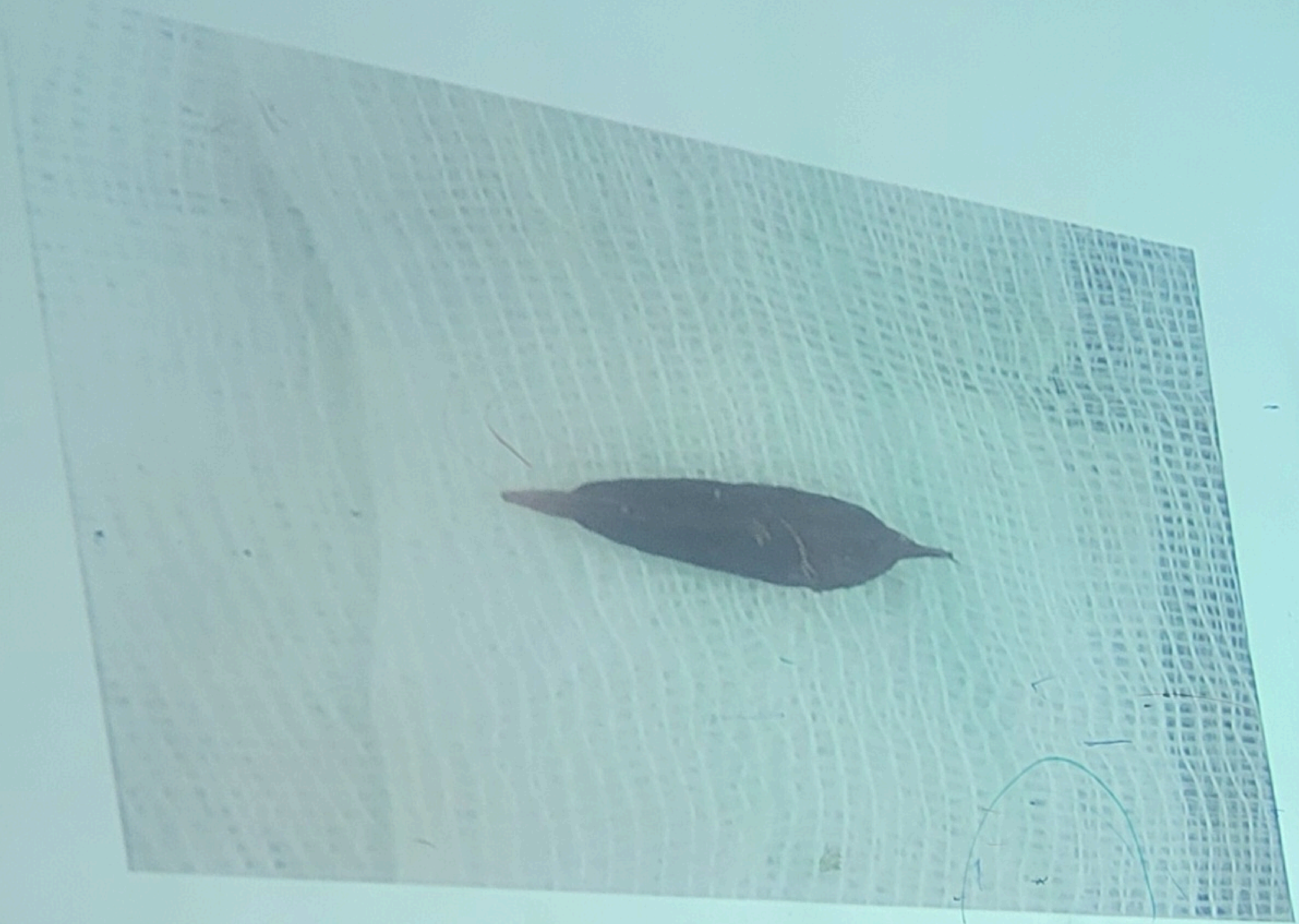
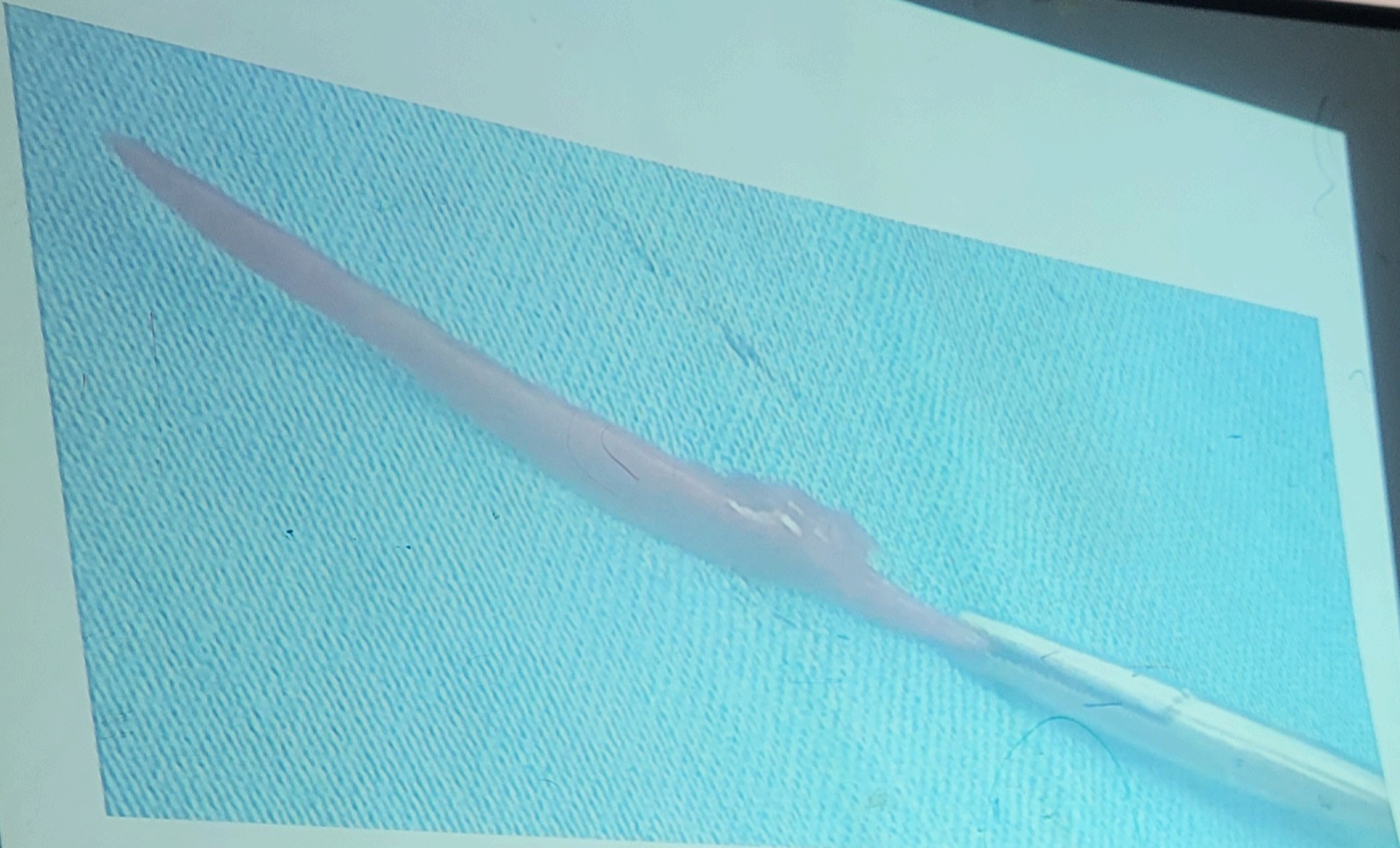
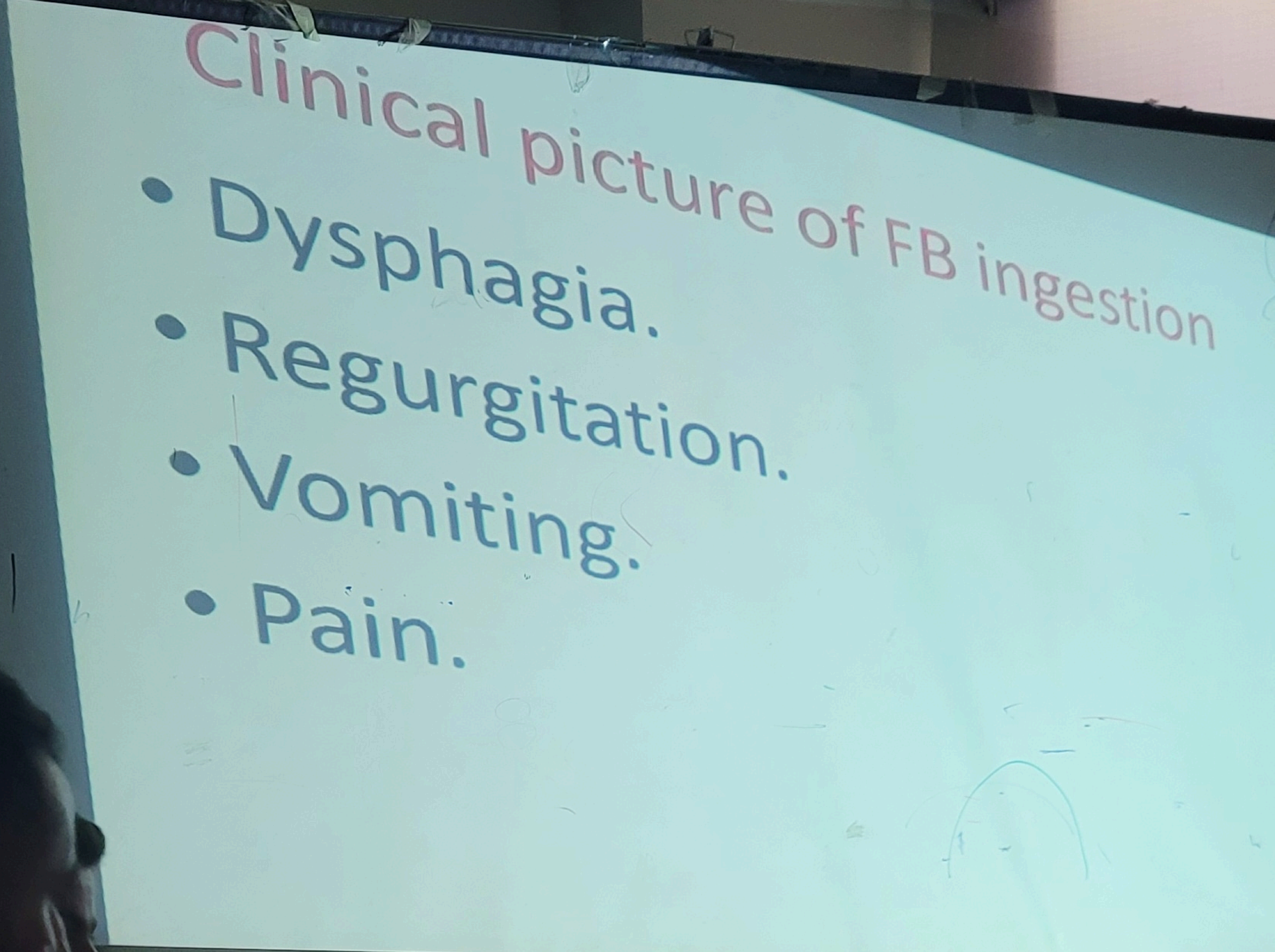


FIGURE 207-9. A, Esophageal injury from lithium battery. Endoscopic photo of second-degree injury from hydrolysis reaction. B, Lithium battery retrieved from the esophagus: note the degree of mucosal reaction on the battery's surface.







Clinical picture of FB ingestion

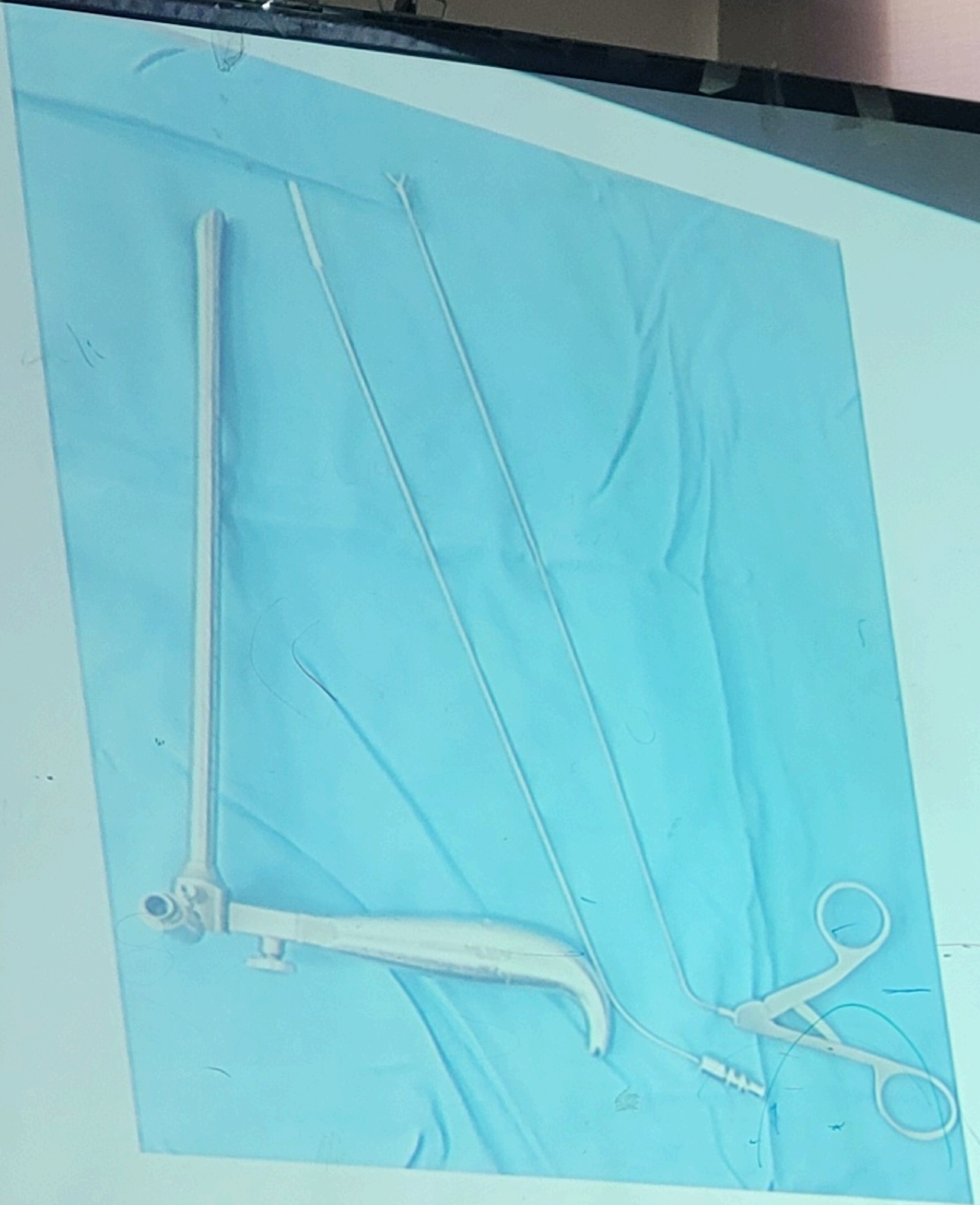
- Dysphagia.
- Regurgitation.
- Vomiting.
- Pain.

Investigations

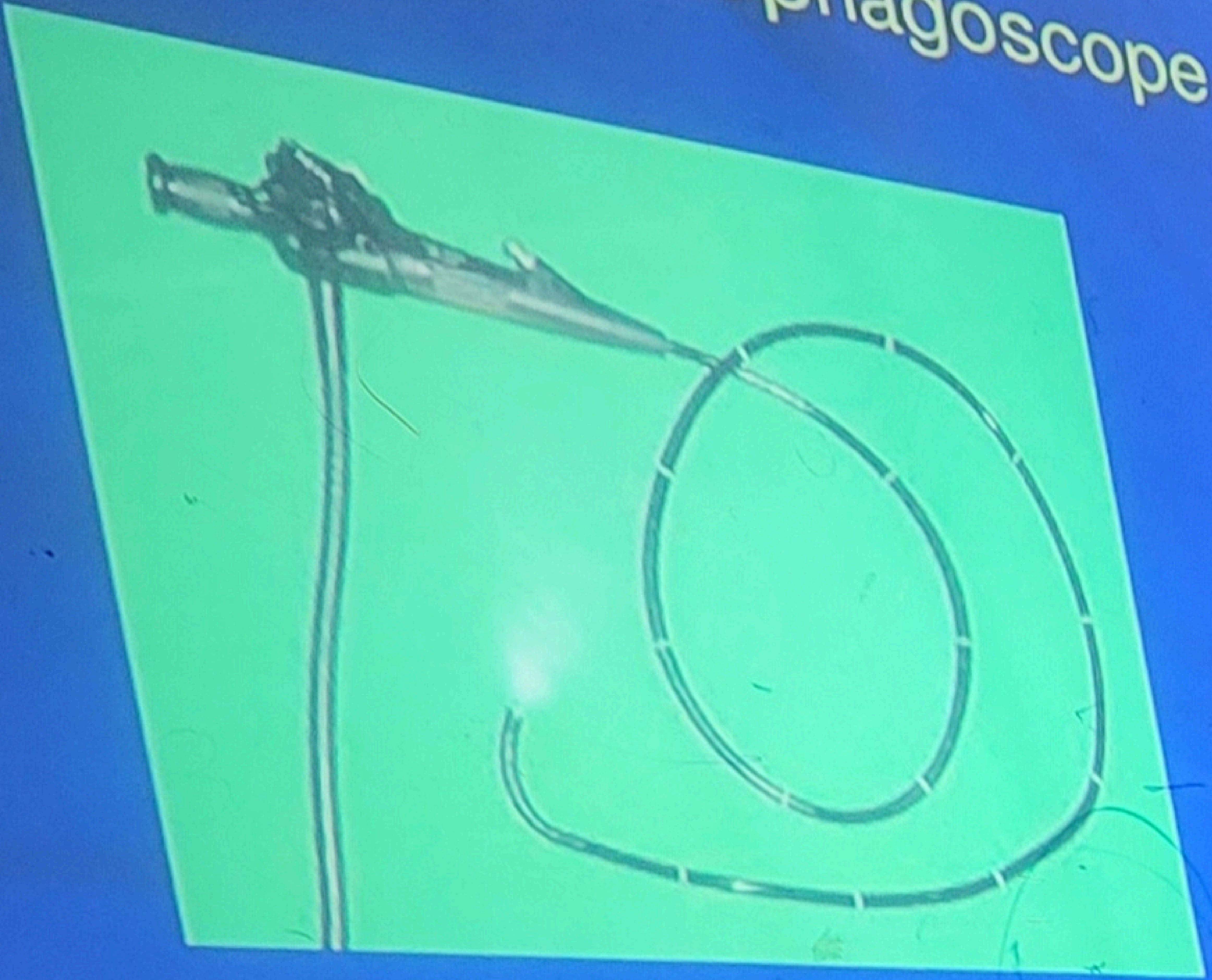
- Plain x-ray. Neck, chest, abdomen.
- Barium swallow.
- CT Scan
- Esophagoscopy.

Treatment of esophageal FB.

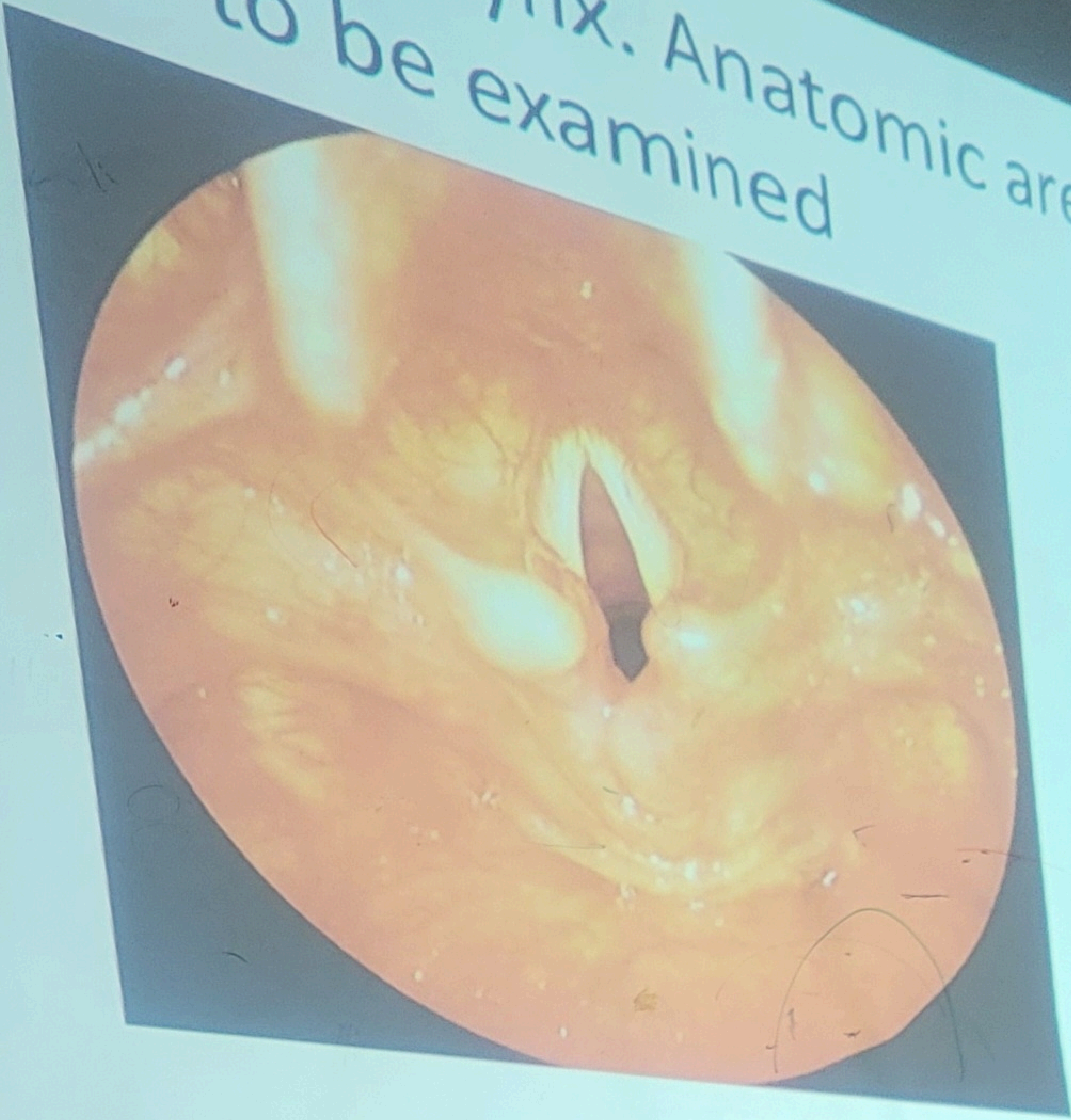
- Esophagoscopy and removal of FB. Under GA.



Flexible Gastro-Esophagoscope



al infant larynx. Anatomic areas to be examined



Rigid laryngobronchoscopy assessment under GA.